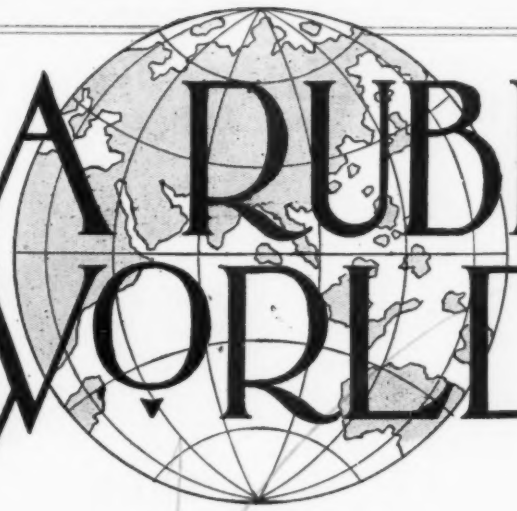
INDIA RUBBER WORLD



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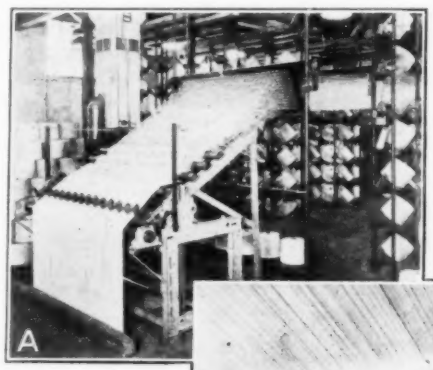
Fillerless Cord Fabric

MARTIN CASTRICUM

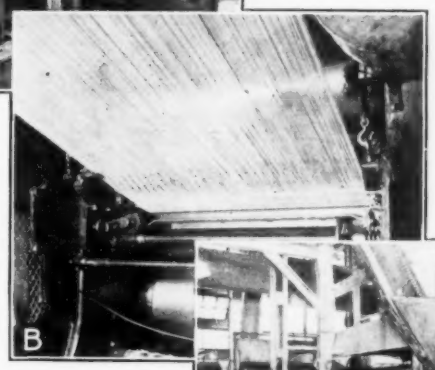
MANAGER FABRIC DIVISION, THE FISK RUBBER CO.

THE present high state of quality control and manufacturing efficiency in the production of fillerless cord fabric for tire carcasses has been the result of over eight years of development. From a small beginning with crude experimental equipment the process has been improved step by step until today we have available a manufacturing unit which for quality control and production efficiency leaves little to be desired.

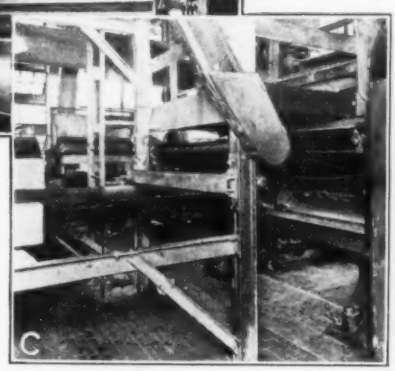
The incentive for the development of this process came from three different angles. The first and most important angle was the one of tire service. It was realized from the very inception of the use of a multi-twist cord in tire carcasses that the practice of weaving the cords into a fabric which contained a very light filler thread was a makeshift. The filler thread never did have any value in the tire. On the other hand, it has proven a distinct detriment in that, as weak as it is, the constant flexing that a tire carcass undergoes in service causes it to chafe through the cords with resultant carcass failures. The presence of the filler thread is also objectionable in that it prevents the cords from lying flat. A woven cord fabric coated with rubber has a very light coating at that point where the cord crosses the filler thread. A considerable amount of ply separation in the finished tire can be traced to this condition.



A—From the cone the cord is threaded through a tension device and various guide boards to a central collector board



B—Spacing unit mounted on calender frame back of middle roll comprises expanding comb, final spacing bar and presser roll



C—Emerging from the calender the rubberized fabric passes through an automatic weight recording device to the wind-up

The impracticability of woven cord fabric is also very clearly shown by what is termed "bagginess." This is a slack condition in a portion of the width of the roll, which, with all the study given it by cotton mills, has never been eliminated. The fabric can be used, but only by feeding it into calenders with a very heavy tension on the cords in the remainder of the width so that they will stretch and allow some tension on the baggy portion. This results, of course, in a tire containing cords having widely varying ability to stretch. It follows then, that those cords having least ability to stretch absorb all of the strain.

Another effect of the heavy tension required to remove bagginess is the shrinkage in width with consequent lack of control of the number of cords per inch. This is serious in that it precludes maintaining sufficient space between cords for insulation.

The necessary complete insulation of all cords, in the case of a woven cord fabric, cannot be affected except through frictioning. On square woven fabric frictioning presents no problem at all but on a flimsy cord fabric it results in serious distortion with its attendant disturbance of the uniformity of cord stretch. At best, frictioning can be carried on only by maintaining a very heavy tension with consequent loss of the most valuable characteristic of the

cord, that is its ability to stretch. So much for quality.

The low production efficiency in the processing of woven cord fabric is another angle which furnished the incentive for seeking a substitute. In the early days of cord fabric weaving it was customary, due to its flimsy character, to ship it in 100 yard rolls. By going to some additional expense for packing material it was possible to increase the length to 500 yards. This seems to be the maximum practical length though even at this length it is impossible to hold the width to a variation of less than five per cent. With 500 yard rolls considerable calender efficiency is lost in feeding the starting end with the calender running at slow speed, and then slowing down to properly guide through the last end of the roll.

The possibilities of reduction of scrap furnished a third incentive. It was practically impossible to guide the starting end of a roll of cord fabric into a friction calender without such serious distortion that the first yard or two had to be scrapped. This was true also of the finishing end. In a tire plant of any size this amounted to many thousands of dollars annually.

The present producing equipment very effectively overcomes all of these difficulties. It consists of a creel, a tension unit, a drying and heating unit, a spacing unit, a four roll calender, and a continuous wind-up. The cord is wound on cones weighing twelve to fourteen pounds and containing from 14,000 to 16,000 yards. The inside end of the cord is allowed to hang free for about twelve inches to allow splicing the outside end of one cone to the inside of another. This makes it possible to provide a continuous supply.

The creel is so laid out that it has two spindles for each end in the finished fabric. One of the spindles holds a cone from which the cord is running while its mate holds a second cone spliced to the first one. When a cone has run out it is immediately replaced by a full one which is spliced to the then running one. The cord, after leaving the cone, is threaded through a tension device and through various guiding thread boards to a central collector thread board. The tension device and all thread boards are equipped with porcelain eyes to prevent any possibility of injury to the cord. They are also arranged so that at the point of leaving the collector thread board each cord has been subjected to a very slight but absolutely uniform tension.

The proper operating tension is obtained in the tension unit which consists of a series of polished steel bars over which the cords are leased in pairs immediately after emerging from the collector thread board. Tension is varied as required by changing the number or position of the bars. The tension unit is also equipped with an expanding comb of the lazy tong type to provide a preliminary width control of the sheet of cords.

The drying and heating unit consists of a stack of copper surfaced drums revolving on roller bearings. These drums carry a constant steam pressure of ten pounds and are so designed that water is automatically ejected. The sheet of cords passes over their surfaces and emerges in a properly hot and dry state without in the least degree having lost its uniformity of tension.

The spacing unit is mounted on the calender frame directly back of the middle calender roll. It consists of an expanding comb, a final spacing bar, and a presser roll, all mounted on a horizontally adjustable carriage. The expanding comb provides a final width adjustment. The final spacing bar is a round steel bar on which has been cut a screw thread of a pitch representing the number of ends desired in the finished fabric. The presser roll is a solid steel roll, very accurately machined and ground. It provides means for pressing the sheet of properly spaced cords into the skim coat on the middle calender roll. The pressure adjustment is hand wheel operated.

The sheet of cords after leaving the heating and drying unit passes through the expanding comb, under the spacing bar, one cord to a groove, around the presser roll and on to the skim coat on the middle calender roll. The calender is of a type having the fourth roll offset at the top. The offset and top rolls form one skim coat on the top roll while the middle and bottom rolls form a skim on the middle roll. It is equipped with conveyers from the warming mills which provide a continuous uniform feed of stock. Mill and calender roll temperatures are controlled with the aid of temperature indicators and recorders with the result that the stock is constantly held at a proper and uniform plasticity.

The sheet of cords, after having been pressed on to the middle roll is carried up on that roll to its bite with the top roll which forces its skim into the other side of the sheet. This operation is carried on under conditions which are ideal. Both coats are applied to the cords and, between the cords, to each other before the cords have lost their heat and before the first coat has lost its plasticity.

After emerging from the calender, the now rubberized fabric passes through a continuous, automatic weight indicating and recording device and to the wind-up. The wind-up is so designed as to allow changing rolls while the calender is operating at full speed. It is equipped with an electrically operated cutter which makes a perfectly straight cut across the fabric and an automatic device for feeding the fabric into the liners without wrinkles.

The product of today's fillerless cord fabric equipment is beyond comparison with woven cord fabric, no matter how carefully and expensively processed. Laboratory tests indicate an infinitely greater uniformity of cord elongation. Uniformity in number of cords per inch and space between cords is controlled absolutely. With the elimination of the frictioning operation it is possible to control total rubber deposits within very close limits.

The effectiveness of applying both coats at once is very clearly indicated by microscopic examination of the finished fabric. It is found that the rubber is driven so completely into the cord that it thoroughly fills in even the helical twist spacings in the various strands making up the cord. Due to the fact that both a continuous supply and continuous take off are provided the operating crew numbers fourteen men as compared with twenty-two needed to handle woven cord fabric. Actual yards produced were increased from 800 to 2,400 per hour and scrap reduced to less than one-tenth of the former figure.

COTTON MANUFACTURERS MEETING

The 124th Spring Meeting of The National Association of Cotton Manufacturers will be held April 25-26, 1928, at the Biltmore Hotel, Providence, R. I. The committee in charge of the program promises that it will comprise something of interest for all who attend.

BENZOL PROHIBITED IN JERSEY

An interesting development early in March was the report that the New Jersey Department of Labor, which has been studying the effect of benzol on those employed in using it, has requested manufacturers of artificial leather to find a substitute and abandon the use of benzol.

PYRAX TALCS

Two grades of white talc known as Pyrax *A* and Pyrax *B* is mined from deposits of pure white talc located in Hemp, N. C., and prepared by new equipment designed for special grinding. These talcs are supplied to the rubber, textile and ceramic industries and all trades requiring white talc.

Measuring Riding Qualities[1]

R. W. Brown

Engineering Laboratories,
Firestone Tire & Rubber Co.

SEVERAL years of research over various highways and byways of the country in an effort to measure the riding qualities of motor vehicles of different types has resulted in the development of a reasonably simple, practical and rugged instrument of the counter contact accelerometer type. Extreme ruggedness of the actuating element is paramount if an instrument is to retain any semblance of accuracy after passing over bad or indifferent roads when attached to a truck axle. Attachment to the axle is required if the riding qualities of tires are to be segregated from the riding qualities of the vehicle as a whole.

Construction and use of elementary forms of the contact accelerometer, described in author's paper on instrumentation and results of riding qualities tests, indicated that the most practical instrument would be one which would count all accelerations occurring above a predetermined value. The present instrument is arranged with accelerometer elements, each element being connected with a separate counter. Hence, at the end of a run, the number of accelerations occurring between six predetermined values can be read direct from

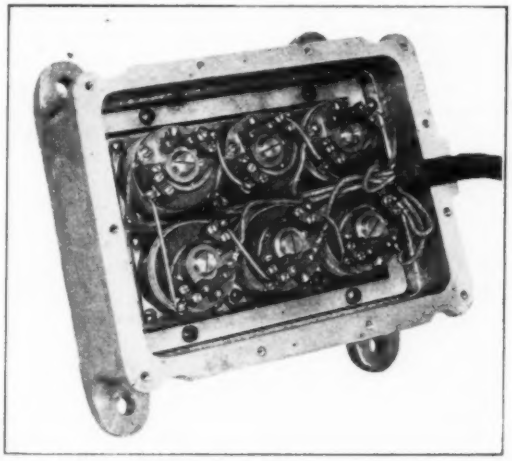


Fig. 2.—Accelerometer for Mounting on Vehicle

the counters. Experience indicates the use of a recorder as impractical if the results of a run of several miles are to be analyzed, as the total number of accelerations occurring per mile runs into the thousands. Therefore, the analysis of a long record is extremely laborious.

The use of integrating devices apparently offered a desirable alternate to the recording device. However, in the early

[1] Presented at the Annual Meeting of the Society of Automotive Engineers, Detroit, Mich., Jan. 24-27, 1928.

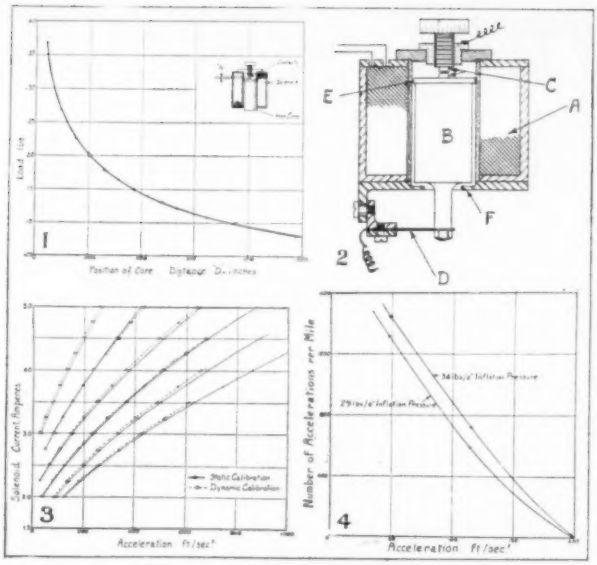


Fig. 1.—Solenoid Accelerometer

type of contact accelerometers it was found that the making or breaking of the contacts was very indefinite and that a large amount of chatter existed. Obviously, if an electrolytic or other electric integrator were to be used, the time the contacts are open or closed must be proportionate to the time the acceleration exceeds the predetermined value. A calibration machine, especially designed to give simple harmonic motion, also described in a former paper, showed conclusively that accurate records when using an integrator as the indicating means cannot be obtained with accelerometers on which the contacts chatter.

The Solenoid Accelerometer

In former contact type accelerometers the weight was supported by a spring or by air pressure. Replacement of the spring or air pressure with a solenoid resulted in the elimination of contact chatter, this desirable condition being a result of the inverse load position characteristics of an iron core in a solenoid, as shown in Fig. 1, Graph 1. The force tending to hold the contacts together decreases very rapidly with slight downward movement. Hence when an acceleration is reached sufficient to start motion of the core downward the movement is propagated by the rapidly decreasing restraining force.

Previous efforts to eliminate this outstanding defect, contact chatter in contact accelerometers, resulted in the introduction of other undesirable errors which are discussed in articles on contact, accelerator gap clearance, and gap error. This also resulted in a very definite time interval of contact opening as, when the downward force on the plunger due to acceleration exceeded the upward force due to the solenoid pull, the plunger moved downward and remained downward until the acceleration decreased appreciably below the contact opening value on the succeeding quarter cycle of the acceleration time curve. The time interval of contact opening was found sufficient to permit the operation of a counter.

A diagrammatic view of the present form of the instrument is shown in Fig. 1 at 2, in which the magnetism from the iron clad solenoid *A* tends to lift the weight *B* and force the contacts *C* together. In operation, this force is opposed by vertical acceleration and the contacts open when the downward force to vertical acceleration becomes the greater. The weight *B* is guided in the solenoid at *E* and at its lower end

by the cantilever spring *D*. The latter also serves as an electrical connection to the lower contact. The downward travel of the weight is limited by the stop *F*. The upper contact at *C* is arranged on a micrometer screw. By varying the setting of the micrometer screw and the cantiliver spring *D*, the calibration of the accelerometer element can be changed. A feature of convenience in use is the variation of range which can be secured by changing the current in the accelerometer solenoids.

One of the outstanding features of all contact accelerometers is the feasibility of absolute calibration by using dead weights. Fig. 1, Graph 3, shows the close agreement of the

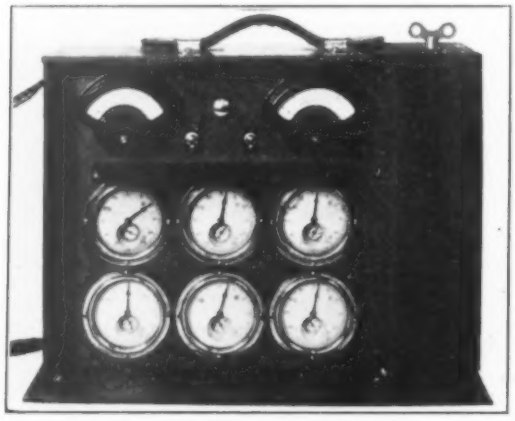


Fig. 3.—Accelerometer Counter

present instrument between dead weight static calibration and dynamic calibration on the simple harmonic motion machine. This curve also indicates the variation in range which can be secured by manipulation of the solenoid current. The dynamic calibration simulates road service as to displacement and frequency. The accelerometer in its present form is shown in Fig. 2 in which six accelerometer elements are enclosed in a water-tight case for mounting on the axle or other portions of the vehicle.

The Accelerometer Counter

Analyses of displacement time records taken under road conditions indicated that a counter must be capable of operating not less than 40 times per second, that the total required time for open contacts must not exceed 0.003 second, and that this must be accomplished with the minimum possible current at a low voltage. Commercially available counters did not even remotely meet these requirements. After some development work, it was found that the escapement of a conventional clock mechanism could be operated at the required rate by a differential magnet on a current consumption of 0.05 ampere, at 6 volts. A six element counter of this type was constructed as shown in Fig. 3. The counter mechanisms, the Wheatstone bridges, and meters showing the current in the accelerometer solenoids and the voltage on the counters, are all incorporated in one self-contained unit. The wiring for the counter, as connected to the accelerometer, consists merely of several Wheatstone bridges, the counters acting as the galvanometers; necessary meters, batteries, polarity-reversal switch, and test plugs; and their connections to the accelerometer solenoids.

Application and Results

Due to the relatively small size of the accelerometer and to its remote connection with the counter, the accelerometer can be mounted on a vehicle axle or on any other portion of the vehicle desired. This enables measurement of the accelerations transmitted through the tires, or through the tires and springs, or, if desired, through the tires, springs, body and seat cushions. In this manner or by using separate accelerometers located in each position, the riding qualities of any individual portion of the vehicle can be segregated readily.

Since contact chatter has been eliminated, the instrument is free from errors caused by low amplitude high frequency vibrations such as are caused by transmission and differential gears, and will only record when the acceleration has exceeded a predetermined amount. Hence, the accelerometer can be mounted wherever desired without regard to high frequency low amplitude vibrations.

Study of Tires

In studying the riding qualities of tires it was found desirable to record the results over a relatively long run, perhaps as much as 50 miles. This procedure minimized the effect of the large number of variables which are bound to occur in driving on public highways and, it is believed, gives a good average performance for the particular equipment under test. Obviously, the tests could be extended to include various types and conditions of road, driving speed, tire inflation pressure, vehicle load, spring suspension, and numerous other conditions that result in actual service.

Fig. 1, Graph 4, shows some typical results which were obtained in preliminary tests of the solenoid accelerometer. The ability of the instrument to differentiate between different inflation pressures in pneumatic tires is evident. The curve shown substantiates generally accepted opinion as to the relationship between riding qualities and inflation pressure.

The difference caused by a change in inflation pressure of 5 pounds is very outstanding and indicates that the instrument is sufficiently sensitive to indicate the effects of major factors of tire design, such as tread contour, provided the data are taken over a sufficiently long run to get a true average condition.

It is probable that many applications will suggest themselves to engineers who desire to measure vibrations. The remote indicating means, the relative simplicity, the ability to change the range by manipulation of a rheostat and the ruggedness of the accelerometer proper, combined in one instrument, make a combination which has heretofore been unobtainable in various devices designed for the measurement of vibrations and should appreciably assist those interested in researches having to do with vibrations and accelerations.

BRAZIL'S RUBBER COME-BACK

Sweden exports a great deal of wood pulp and paper, but there is never anxiety about exhaustion of its spruce, for an efficient forestry service assures continual regrowth. Even among the natives of Malaya, Borneo, Sumatra, and elsewhere in the East, there is a steadily-growing spirit of forest conservation; and while the rubber replanting done by them is discredited by colonists as crude, yet it is nevertheless helpful. Brazil, too, is beginning to realize that nature's gifts can no longer be regarded as limitless, and it is said that it will not be long before it will adopt a comprehensive plan to protect and develop its wooded resources. It is even possible that through replanting rubber on a scientific and ever-expanding scale it may soon silence the taunts that the "kidnaped" Hevea would never again reign in its ancestral home. The world's rubber trade will gladly encourage the revival of the lagging "wild" industry of the Amazon Valley, and, while it may long look to the plantations for its main supply of crude, it will always welcome an abundance of Acre Bolivian and Upriver fine Para.

Rubber Compounding Practice[1]

White Pigments Used in Rubber Mixings—Zinc Oxide—Lithopone—Titanium Oxide—Relative Strengths—Hiding Power—Determination of Tinting Strength

WEBSTER NORRIS

WHITE rubber goods are conceded more or less preference over black when custom or fancy control what is most suitable or appropriate for special service. Hence hospital sheeting, water bottles, tubing, hollow goods such as bulbs, balls, dolls and toys, laundry wringer rolls, etc., are commonly made of white rubber composition.

The degree of whiteness of rubber goods varies greatly according to the grayness of the compounding ingredients and white reclaim used, if any. White pigments generally have a yellowish hue. This tendency can be counteracted by the addition to the mixing of a small amount of ultramarine blue. The quantity of blue to add in any given instance is determined by experiment for the individual case.

White Pigments

The chief white rubber pigments are lead, free zinc oxide, zinc sulphide and titanium oxide. Any of these whites is available. For usual white rubber pigmentation rubber compounders confined themselves to various qualities of zinc oxide and to lithopone. In recent years preparations of titanium oxide have been added to the compounders' white resources. It is notably strong in tinting power and esteemed as a permanent white inert rubber compounding ingredient.

Since automobile tires are no longer made with white treads and sidewalls the tonnage of zinc oxide required by the rubber industry has greatly decreased. It is essential, however, for the activation of most accelerators and, with lithopone, is extensively used for white and colored rubber goods such as proofed and calendered sheet goods, druggists' sundries, tubing, dolls, balls, toys, bathing caps and shoes, etc.

All ingredients for white rubber mixings are chosen to secure all the whiteness possible. Thus, when crude rubber is used preference is given to pale crepe. Reclaim must be made from white or uncompounded scrap. All lead containing ingredients must be avoided because they blacken by sulphur in hot vulcanization. Mineral rubber, asphaltic softeners, coal tar and other dark ingredients are necessarily omitted.

Zinc Oxide

Automobile tire production in 1914 was about 5,000,000. In 1927 tire production was estimated at 65,000,000. This is a 13-fold increase during the progress of which carbon black has entirely superseded zinc oxide for tire tread reinforcement. Notwithstanding that fact the rubber industry is now consuming a greater tonnage of zinc oxide than in 1914 because while at that time it entered heavily into tire tread mixings, it now is used, in considerably smaller proportions, in practically every batch of rubber composition for the activation of the organic accelerators which are universally used in all rubber goods lines. Zinc oxide holds its place strongly as a pigment for ordinary white rubber work where great excellence of color is not essential.

Lithopone

Lithopone is an inert brilliant white paint pigment which has long been used by the rubber industry in white goods. It is made by the reaction of zinc sulphate with barium sulphide in water solution resulting in a white precipitate. This is dried and roasted which drives off free sulphur and produces some zinc oxide. Commercial lithopone contains ap-

[1] Copyright, 1928, by Webster Norris. Continued from INDIA RUBBER WORLD, March 1, 1928, pp. 65-66.

Typical Rubber Mixings Containing White Pigments

WHITE MOLDED ARTICLES

First latex	22
White factice	8
Zinc oxide	**32**
Whiting	23
White vulcanized dust	10
Sulphur	4
Lime	1
Ultramarine	Trace
	100

Cure 30 minutes at 274°F.

WHITE TUBING

First latex crepe	30
White factice	18
Lithopone	**30**
Zinc oxide	10
Chalk whiting	8
Lime	1
Sulphur	3
	100

Cure in talc 1 hour at 274° F.

HOSPITAL SHEETING

Pale crepe	28.0
White factice	6.0
Titanox	**45.0**
Hard white clay	17.0
Sulphur	3.0
Lime	0.5
Degras	0.5
Ultramarine	Trace
	100.0

Cure 60 minutes at 274°F.

HIGH GRADE SHEET STOCK FOR FANCY ARTICLES

Pale crepe	100
White factice	8
Light resisting lithopone	**30**
Whiting	15
Vapor cured.	153

TOYS AND HOLLOW BALLS

Smoked sheets	19.0
Chalk whiting	47.0
Zinc oxide	**15.0**
White reclaim	15.0
Sulphur	1.5
Accelerator	0.5
Degras	2.0
	100.0

Cure 20 minutes at 307°F.

WHITE MOLDED SOLE

Smoked sheets	24.0
Ground white vulcanized waste	45.0
Titanox	**12.0**
Suprex clay	8.0
Zinc oxide	5.0
Sulphur	2.0
Stearic acid	1.5
Accelerator	0.5
Degras	2.0
	100.0

Cure 12 minutes at 280°F.

proximately 29 per cent zinc sulphide, 70 per cent barium sulphate and 1 per cent of zinc oxide. Its specific gravity is 3.60 to 4.10.

It largely displaces zinc oxide as a pigment for the better grades of white rubber goods. Its superior whiteness compared to zinc oxide is due to the presence of zinc sulphide as well as to the fineness of its particle size. Prolonged exposure to sunlight causes ordinary lithopone to darken appreciably. This effect is disregarded in ordinary rubber work except in fine white goods and those of delicate color tints. For particular work the rubber compounder resorts to special light resistant lithopone of which there are a number of brands made under a patented process. These permanently retain their brilliancy and give clear unchanging tints with colors.

A number of well known brands of lithopone are found in the domestic market among which are the following: albalith, azolith, sterling, etc.

Titanium Oxide Whites

Titanium oxide is well known in the paint and printing ink industries as a white pigment of unsurpassed tinting power. It is obtained from the mineral Ilmenite, the composition of which corresponds to 47.3 per cent of iron protoxide and 52.7 per cent of titanium oxide. By treatment with sulphuric acid the titanium oxide is dissolved out of Ilmenite and precipitated in colloidal form. This is processed through a special washing system and finally calcined at a high temperature yielding titanium oxide. The most satisfactory white pigment base for the oxide is blanc fixe and is used in the composite pigment known as Titanox which analyzes 25 per cent titanium oxide and 75 per cent barium sulphate.

The American Society for Testing Materials defines hiding power thus: "Hiding power—the power of a paint or paint material as used to obscure a surface painted with it."[2]

The same authority defines tinting strength as follows: "Tinting Strength—the power of coloring a given quantity of paint or pigment selected as a medium standard for estimating such power."[3]

Titanox is a true composite opaque precipitated pigment secured by suspending blanc fixe in pulp form with titanium sulphate solution and then precipitating the titanium oxide. The combined precipitates are thoroughly washed and subsequently calcined to remove the water of hydration. The pigment so produced is not a mechanical mixture but rather an intimate physical one in very fine uniform powder. It is probable that in the process of precipitation the colloidal titanium compounds are absorbed in the sponge-like structure of the amorphous barium sulphate with which they are later coalesced by calcination.

Although titanium pigments were primarily developed for use in paint, their value in the pigmentation of white and colored rubber products soon became apparent, especially where the weight of the finished goods must be kept as low as possible. Owing to the inert nature of titanox, it is believed that it has no reaction with the rubber or the sulphur used in the cure but serves rather as a filler pigment having a high hiding and tinting value.

For thin gage rubber goods such as bathing caps, toy balloons, aprons, toys, hospital sheeting, etc., titanox has proved especially advantageous particularly in rubber calendered to a thickness of five thousandths of an inch where a dense pigment is necessary to avoid overloading the stock. In stocks of this type titanox is extensively used for white, flesh tints and other delicate colors. It is equally advantageous in such goods whether they are cured by the sulphur chloride method or by hot vulcanization.

[2] *A. S. T. M. Standards*, 1924, p. 877.
[3] *A. S. T. M. Standards*, 1924, p. 879.

Recently another titanium composite pigment has been developed usually referred to as titanium calcium pigment. This consists of titanium oxide precipitated upon calcium sulphate. While characterized by whiteness and chemical inertness equal to that of titanox, titanium calcium pigment is lighter in specific gravity and greater in tinting strength. The specific gravity of titanox is 4.3; that of titanium calcium pigment is 3.19.

Experiments have indicated that of two compounds, one containing titanium calcium pigment and the other titanox in equal weights, but otherwise identical, the stock made with the calcium base pigment will be appreciably lighter in color. On the other hand, it will not quite equal the titanox stock in the qualities of elasticity, toughness, resilience or resistance to abrasion.

The properties of titanox include the following: hiding power from 50 to 100 per cent more than the usual opaque pigments, high light reflective value, chemically stable, inert and light proof, produces unusually bright and clean tints when used as a tinting base, withstands high temperature without discoloration.

Relative Value of White Pigments

White pigments vary in their hiding power or ability to conceal black surfaces. The following data on this point is quoted from determinations made with a Pfund cryptometer in the research laboratories of The New Jersey Zinc Co., Palmerton, Pa.[4]

The figures express hiding power in square centimeters surface per gram of pigment.

Zinc sulphide	124
Titanium oxide, 98%	118
Titanox, barium sulphate base	68
Lithopone	54
Lead free zinc oxide, American process	49
Zinc oxide, French process	40
Kadox zinc oxide	30

Hiding and Tinting Power

The hiding power and tinting power figures[5] of some opaque white pigments vary somewhat with different samples of the same kind, but representative average samples gave the following relative results:

	Hiding Power Weight Basis	Tinting Power Weight Basis
Carbonate white lead	100	100
Zinc oxide	115	170
Lithopone	125	200
Titanox	200	350

Dutch process white lead is taken as the standard for both hiding and tinting power because most convenient and reliable for the purpose.

Determination of Tinting Strength

Below is a reliable method[6] for comparing the tinting strengths of white pigments.

The pigments are mixed with a definite quantity of a standard black pigment, rubbed up with light colored linseed oil and compared with a standard dry white lead prepared in a similar manner. The shade of gray produced by mixing the standard white lead with an arbitrarily chosen amount of the standard black pigment is designated as the shade equivalent to 100 per cent tinting strength. Other shades of gray corresponding to different per cent tinting strengths are produced by mixing a constant quantity of the

[4] "Hiding Power of White Pigments." *J. Franklin Inst.*, July, 1923.
[5] R. L. Hallett, Research Laboratory of the National Lead Co., Brooklyn, N. Y., in *Proceedings of the American Society for Testing Materials*, Vol. 22, Part 2, 1922, "Hiding Power of Pigments."
[6] Research Laboratories, National Lead Co., Brooklyn, N. Y.

standard white lead with varying amounts of black as determined by the following inverse proportion:

$$C:A = X:100$$

Where C = amount of black producing 100% standard gray shade.
A = new percentage gray shade
X = amount of black for new percentage gray shade

Method of Test

The samples are rubbed up in every case with a constant proportion of black pigment, which is the amount used for 100 per cent when mixed with the standard white lead, then they are compared with the different percentage standard grays produced as described above, until a match is found.

Materials required are: (1) Dry white lead standard for tinting strength. (2) Dry black pigment standard for tinting strength. This is prepared at the laboratory by thoroughly mixing one part of lamp black and six parts of precipitated chalk. (3) AA refined linseed oil.

The method for white lead and basic lead sulphate white is as follows: Prepare the necessary percentage standard gray shades by rubbing up in oil 1 gm. of the standard white lead with the required amount of standard black pigment. For instance, if the samples to be compared are expected to lie between 90 and 110 per cent tinting strength, make up three standard gray shades as follows: 90, 100, and 110 per cent. For 100 per cent standard gray, the proportions are: 1 gm. standard white lead and 0.035 gm. of standard black pigment. The amount of black required for the other percentage standard gray shades is found, by the following calculation:

$$C:A = X:100$$
$$.035:110 = X:100$$
$$110\,X = .035 \times 100$$
$$X = .0318$$

Each of the samples on which tinting strength is to be determined is mixed in the following proportions: 1 gm. of the dry pigment sample with 0.035 gm. of the standard black pigment. These portions of white pigments and the required amounts of standard black pigment are weighed out separately with great care on a very sensitive analytical balance, and as weighed out, are placed on a glass plate, then covered with a watch glass. For each separate mixture of white and black 0.120 gm. of the AA refined linseed oil is carefully weighed out on the end of a spatula, which spatula is to be used in the rubbing up.

The linseed oil is then rubbed up with each of the mixtures, rubbing to a smooth paste but without pressure which might result in grinding the pigment particles. After the pigments are incorporated with the oil, the paste is rubbed three minutes to insure having a homogeneous mixture. Each of the rubbed up pastes is then placed separately on a glass microscopic slide and the sample is compared with the standard grays until the nearest possible match is found. In placing the pastes on the microscopic slide the edge of sample rub-up and the edge of the standard rub-up must be placed in contact with each other in order to bring out the differences in tone.

The comparisons are made by viewing the pastes through the glass with the light from over the observer's shoulder and holding the glass so that the line of vision shall be perpendicular to the plane of the glass. If a sample is very close to one of the standard grays, it is graded as such. If it falls between two standard grays, it is graded with a percentage midway between them. A difference of 5 per cent is as close as can be expected to be obtained.

Standard white lead gray tints are prepared by rubbing up pastes composed of 1 gm. of dry white lead with 0.12 gm. of fuller's earth refined artists AA grade of linseed oil. The standard rub-ups should contain additions of standard black pigment as follows: for 100 per cent, 0.0350 gm.; 90 per cent, 0.0389 gm.; 110 per cent, 0.0318 gm.

Standard black pigment is prepared by weighing one part of lamp black and six parts of precipitated calcium carbonate. These materials are dry ground together in a laboratory ball mill and passed through a fine sieve to further average the mixture. The calcium carbonate is without appreciable tinting power and serves merely as a diluent to facilitate more accurate weighing out of the black in preparing a test of tinting power.

Rims Inspected and Approved by the Tire & Rim Association of America, Inc.

Rim Size	Feb. 1928 Number	Feb. 1928 Per Cent	2 Mos. 1928 Number	2 Mos. 1928 Per Cent
Motorcycle				
24 x 3	2,951	0.2	7,023	0.2
26 x 3	12,000	0.7	12,428	0.3
28 x 3	.....	....	452	0.0
Total	14,951	0.9	19,903	0.5
Clincher				
30 x 3½	29,749	1.7	72,055	2.0
31 x 4	.....	....	.....	....
Total	29,749	1.7	72,055	2.0
18" Balloon				
18 x 3½	577	0.0	9,362	0.3
18 x 4	76,346	4.2	193,053	5.3
18 x 4½	7,235	0.4	11,830	0.3
18 x 5	.....	....	.....	....
Total	84,158	4.6	214,245	5.9
19" Balloon				
19 x 3½	136,358	7.5	217,704	6.0
19 x 4	165,779	9.3	340,814	9.4
19 x 4½	118,669	6.6	185,073	5.1
19 x 5	.....	....	.....	....
Total	420,806	23.4	743,591	20.5
20" Balloon				
20 x 3½	58,845	3.3	105,500	2.9
20 x 4	264,751	14.8	526,618	14.6
20 x 4½	35,404	2.0	96,469	2.7
20 x 5	32,399	1.8	77,924	2.1
20 x 6	21,906	1.2	31,107	0.9
Total	413,305	23.1	837,618	23.2
21" Balloon				
21 x 3½	36,225	2.0	106,955	3.0
2.75-21-D	477,346	26.4	980,283	27.6
21 x 4	78,769	4.3	160,704	4.1
21 x 4½	48,564	2.7	107,908	3.0
21 x 5	541	0.0	1,526	0.0
21 x 6	.....	....	.....	....
Total	641,445	35.4	1,357,376	37.7
22" Balloon				
22 x 4	756	0.0	756	0.0
22 x 4½	.....	....	.....	....
Total	756	0.0	756	0.0
High Pressure				
30 x 3½–23	4,419	0.2	7,943	0.2
32 x 4½–23	7,283	0.4	10,466	0.3
32 x 4 –24	3,874	0.2	7,112	0.2
33 x 4½–24	.....	....	406	0.0
33 x 4 –25	610	0.0	1,293	0.0
34 x 4½–25	.....	....	.....	....
Total	16,186	0.8	27,220	0.7
20" Truck				
30 x 5–20	137,495	7.6	265,515	7.3
32 x 6–20	21,722	1.2	37,151	1.0
34 x 7–20	6,673	0.4	13,336	0.4
36 x 8–20	6,112	0.3	9,156	0.3
40 x 10–20	789	0.0	1,259	0.0
Total	172,791	9.5	326,417	9.0
22" Truck				
36 x 7–22	332	0.0	614	0.0
24" Truck				
34 x 5–24	2,355	0.1	5,085	0.1
36 x 6–24	3,504	0.2	5,556	0.2
38 x 7–24	2,265	0.1	2,818	0.1
40 x 8–24	3,834	0.2	4,550	0.1
44 x 10–24	.....	....	167	0.0
Total	11,958	0.6	18,176	0.5
Grand total	1,806,437	....	3,617,971	....

Cementing Rubber Insoles

Automatic Machines for Single and Double Cement Coating of Insoles and Other Shoe Parts

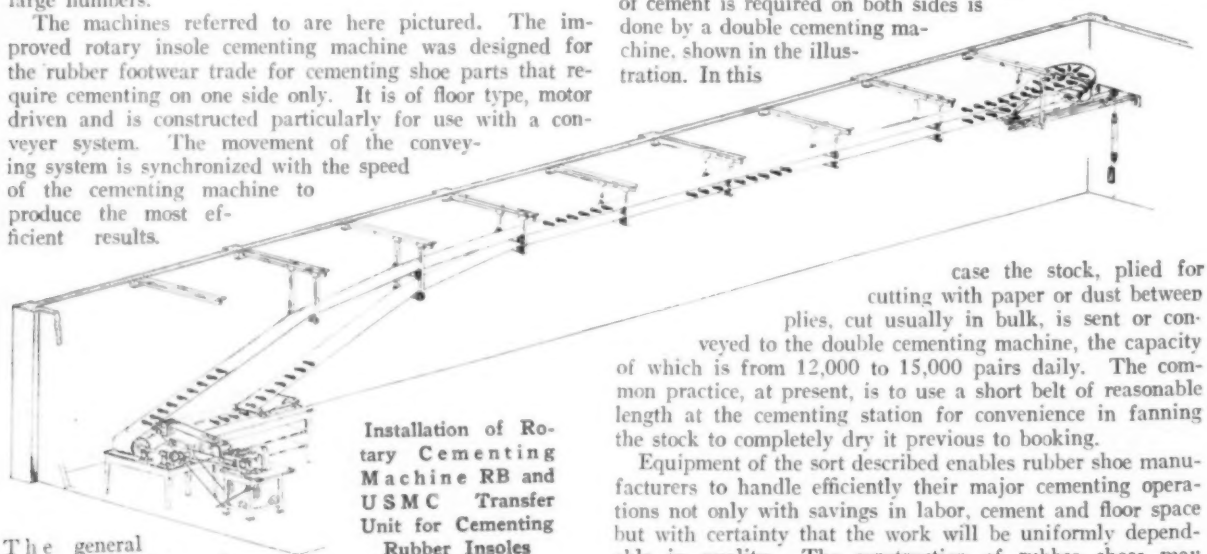
Rotary Cementing Machine —Model RB

THE old hand methods of preparing shoe parts and constructing boots and shoes have persisted strongly for generations. From time to time advances have been made in every factory by the introduction of special devices or machines invented or developed by shoe plant mechanics. Some years ago the development of the moving assembly of automobiles suggested the application of the same system for building rubber shoes. Its adoption for this work represented a distinct saving in labor over the old standard hand methods whereby a single operator built the entire shoe. This improvement consisted in the use of an endless conveying belt which transferred shoe lasts and shoe parts slowly between lines of shoe makers seated along either side of the conveyer. The lasts and parts were thus assembled progressively by the workers with the least effort.

Machine Cementing System

The conveyer belt idea has been further utilized in a recent development for transferring and drying parts to and from automatic cementing machines. Such shoe parts include inner soles, stay-pieces and similar parts used in large numbers.

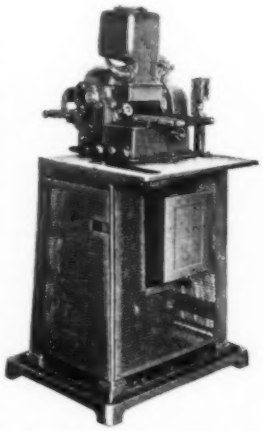
The machines referred to are here pictured. The improved rotary insole cementing machine was designed for the rubber footwear trade for cementing shoe parts that require cementing on one side only. It is of floor type, motor driven and is constructed particularly for use with a conveyer system. The movement of the conveying system is synchronized with the speed of the cementing machine to produce the most efficient results.



Installation of Rotary Cementing Machine RB and USMC Transfer Unit for Cementing Rubber Insoles

The general plan of installation of this cementing system is outlined in the diagram. It is so arranged that it effectively provides for cementing insoles, fillers, juniors, etc., where cement is required on one or both sides.

Fabrics for these pieces are delivered to the cutters, and after cutting, usually in bulk, the parts to be cemented are brought or conveyed to the rotary cementer which may be placed either lengthwise or crosswise of the conveyer belt to meet individual needs in different plants.



USMC Double Cementing Machine—Model B

The capacity of the rotary cementing machine is 15,000 to 20,000 pairs of insoles daily. It is a complete unit in itself. The length of the conveyer needed depends upon the cement used and the drying time required. In order to produce a central cementing station and thus secure definite control over the insoles used and improve the economy of the installation a second mechanism, known as the transfer unit, is introduced. This device automatically transfers the cemented pieces from the top to the returning portion of the conveyer. This permits centralization of the cementing at one station. At this point the parts can be apportioned according to the daily tickets for the workers and removed for distribution to them when needed.

The cementing of rag fillers and juniors, where a deposit of cement is required on both sides is done by a double cementing machine, shown in the illustration. In this case the stock, plied for cutting with paper or dust between plies, cut usually in bulk, is sent or conveyed to the double cementing machine, the capacity of which is from 12,000 to 15,000 pairs daily. The common practice, at present, is to use a short belt of reasonable length at the cementing station for convenience in fanning the stock to completely dry it previous to booking.

Equipment of the sort described enables rubber shoe manufacturers to handle efficiently their major cementing operations not only with savings in labor, cement and floor space but with certainty that the work will be uniformly dependable in quality. The construction of rubber shoes may always remain a hand operation but a visit to a modern shoe plant discloses many preparatory processes now done by special machines which were formerly conducted by hand labor.

Physical Bases *of* Tire Cord Properties—II.

H. P. GURNEY AND E. H. DAVIS[1]

TIRE cord is made from 13s to 23s yarns running 11,000 yards to 20,000 yards, respectively to the pound. These yarns twisted right handed with from 14 to 20 turns per inch are plied with 3 to 5 plies into singly plied yarn in the same right handed direction as the single yarns, thereby, of course, imparting more twist to the single yarns. Normally with plied yarns, the twist of single yarn and plying is reverse in order to procure proper balance. Three of the plied yarns so obtained are twisted in the reverse or left handed direction, forming tire cord which is approximately cylindrical in contour, though the surface is helically convoluted and of a gage or diameter of 0.030 to 0.040 inches and weighing one pound to 1,000 to 1,500 yards. See Fig. 1.

It should be noted that in twisting single yarns, contraction takes place. In plying single yarns, contraction in both single and plied yarn takes place. In second plying due to untwisting effect upon single and plied yarns a slight elongation takes place with respect to single yarn and plied yarn lengths considered in themselves but an overall contraction in twisting.

If t_0, t_1, t_2 and T_0, T_1, T_2 are the manufacturing and actual twists per inch of the single yarn, first and second ply twists respectively, then these are approximately related as follows:

(1) $T_1 = t_2$

(2) $T_2 = t_1 - t_2$

(3) $T_0 = t_0 + t_1 - t_0$

To be more correct and to allow for usual contractions and extensions in twisting and plying usually involved, t_1 in (2) should be reduced about 15 per cent, t_2 in (2) about 10 per cent, t_0 in (3) increased about 5 per cent, t_1 in (3) decreased about 20 per cent and t_2 in (3) decreased about 15 per cent, though these percentages vary with the construction.

By taking into account yarn and cord diameters, these twists per inch may be better expressed in terms of angles of lay of fibers with respect to single yarn axes (ranging from 20 to 50 degrees); of single yarn axes with respect to first ply axes (ranging from 15 to 30 degrees) and of first ply axes to cord axis (ranging from 15 to 45 degrees). These angles define the twist more visually than manufacturing twists and bear simpler relations to cord stretch. See Figs. 2 and 3.

As the cord is process stretched and further service stretched these angles of lay diminish, due not only to cord extension, but to consequent diametial contraction. As a cord stretches 1 per cent in length the diameter or gage diminishes by 1 per cent or so, slightly less for high twist cords, slightly more for low twist cord, slightly less for denser cords of longer stapled cotton, slightly more for more open cord of shorter stapled cotton.

A yarn structure may be considered to be made up of fibers following lines of singly generated helices of the same pitch concentric to the yarn axis. The outer fibers are not really "tied into" the single yarn structure except through kinkiness or lack of perfect parallelism. A cord structure may be considered as being made up of fibers following along lines of concentric helices about single yarn axes. These axes in turn are helices generated about the axes of three plied yarns. These three plied yarn axes are in turn helices generated (in opposite direction from the two former) about the main cord axis. Fiber axes (and fibers that are long enough) pass alternately from cord surface to interior, hence the surface fibers of the single yarn components of the cord are better "tied in" than with single yarn alone.

Now the greater the angles of lay of fibers (or in consequence the higher the twist multiplier) or plied yarns, the more effectively longitudinal stresses are resolved into inward radial concentric pressures, tending to hold the fibers together and to better transmit stresses from fiber to fiber. With high twist, stresses are more efficiently or uniformly distributed along the individual fibers, the fiber end taking up the stresses more rapidly. But the distribution of stresses across the yarn cross sections is more concentrated towards the central axes, hence less efficient than with low twist.

Conversely, with low twists, the efficiency of stress distribution along the fibers is lower, but the yarn cross sectional distribution efficiency is superior. Hence, there is an intermediate combination of twists which makes for maximum all round efficiency. This combination depends upon just what criterion be selected as a measure of merit, and need not be the same for tensile strength, as for resistance to repeated stresses.

The properties of tire cord can better be understood if single yarn and plied yarn properties be simultaneously treated.

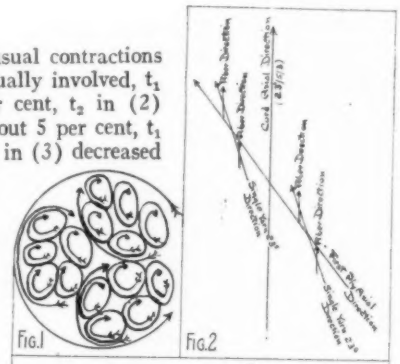


Fig. 1

Fig. 2

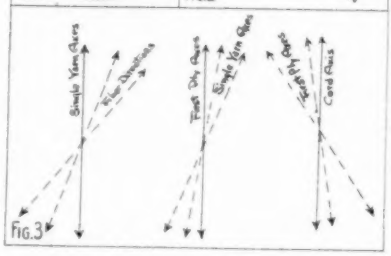


Fig. 3

Fig. 1. Arrows indicate direction of twist. Fig. 2. Angles made by parts of the cord structure. Fig. 3. Angles of fibers to single yarn axis, angles to first ply axes, and angles to cord axis

[1] Lawrence & Co., 24 Thomas St., New York, N. Y. Continued from INDIA RUBBER WORLD, March 1, 1928, pp. 53-55.

The breaking loads of single yarns twisted to correct twist multiplier (about 4 or so, this factor being greater the shorter the cotton), but made up to different weights, numbers or count are not strictly proportional to the fibers per cross section, but to these only after deducting a percentage of the surface fibers. Hence, finer yarns are proportionately weaker when made from the same cotton. This is possibly on account of the surface fibers not being "tied in" as well as the fibers below or within the surface. In fine yarns, a greater proportion of fibers are surface fibers, than in coarse yarns. Not only so, but with longer and finer cottons the proportion of visible yarn surface fibers is also less and partly on this account finer numbers can be spun therefrom. With tire cord, however, these surface fibers, as noted, are pretty well "tied in" at frequent intervals more so, of course, in 23*/5/3 than in 7*/2/2; still in all cases there is a "tying in" effect.

Roughly, as the average cotton fiber length increases 1 per cent in single yarns, the yarn tensile increases 1½ per cent to 1¾ per cent. This percentage is somewhat greater for shorter, somewhat less for longer cottons. The percentage is somewhat more the lower the regain. This increase in strength is not due to greater fiber tensile (if such exists, it is very slight, not more than 1/10 per cent per 1 per cent increase in length), but is due to better gripping of fiber to fiber resulting from greater fiber length available and to greater pliability of the individual fibers. This permits the fibers to hug together more closely, whereby the concentric tensions generated by longitudinal tension are applied to smaller areas. With very high twists, the tensiles of yarns made from long and short cottons drops, converging toward a common tensile which reflects the approximate equality of the cotton material strength of, at least, normal (not tinged or weathered) cottons.

Where single yarns are plied together, the tensile and elongation at rupture, as well as the stretch per unit stress, is increased.

It may be stated approximately that in single yarns, the tensile is 20 to 50 per cent of the cotton fiber tensile, in plied yarns is 25 to 60 per cent and in tire cord is 35 to 65 per cent, depending upon cotton and structure.

In a series of tire cords, the tensile of 3-inch lengths of single yarns, plied yarns removed from cord without rearrangement of actual twist and cord itself exhibited the following characteristics:

	Relative tensile per unit of initial cotton cross section prior to to stressing	Percentage variability of same	Elongation at rupture	Relative tensile corrected to actual cotton cross section at rupture
Removed Single Yarn....	100	10 %	9%	100
Removed Ply Yarn	115	5 %	14%	120
Full Tire Cord	110	2½%	20%	120

Hence in proceeding from single yarn to cord, the tensile is increased, due in part to the elimination of variability through parallel disposition of compensating inequalities and through "tying in" of surface fibers of the component single yarns. Also elongation at rupture markedly increases. The principal merit which thereby ensues is not so much the production of greater extensibility of cord in service, but the prevention of fiber slippage in service, still permitting greater adjustability of cord to process and service stretch. Generally the greater the twist the less the tensile of cord and as the per cent elongation at rupture increases by 1/55 of its value (due to more twist) the tensile sinks by 1 per cent. Approximately the same ratio, 1/48 per 1 per cent, holds with single yarns although the elongation at rupture, as can be seen, is far less than with tire cord. In recent years there has been a distinct trend from high to low tensile, indicating practically that specification tensile strength is not the most adequate measure of service strength.

In extending tire cord in the first cycle stretch, the elongation at any stress increases by 1/140 as the tension increases by 1 per cent, hence the stress strain curve appears to flatten out as the stress increases proportionately faster than the strain. This makes the cord more stretchy for slight tensions, less stretchy or more tight toward greater tensions.

The actual percentage elongation at any stress increases by about 1/15 of its magnitude, as the actual twist multiplier of the single yarn is increased by one unit, or the corresponding constant of the actual first or second plying twist multiplier. This effect of actual twist upon extensibility is, however, slightly greater for second plying and slightly less for first plying. The relation of extensibility changes to *manufacturing* twist multiplier changes is considerably more complicated.

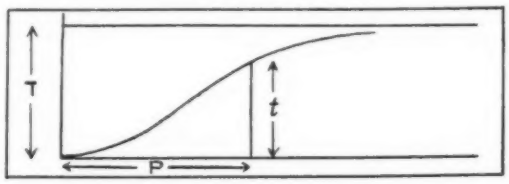
The behavior of tire cord toward regained moisture and toward temperature elevation may be summarized by stating that up to 8 per cent regain, the increase in tensile is very rapid at room temperatures, say 6 per cent for each 1 per cent increase in regain; but above 8 per cent the rate of increase is very small. As the temperature rises, the tensile of bone dry cord diminishes by 1/10 per cent per 1 degree F. rise for moderate elevations, to 2/10 per cent per 1 degree F. rise for greater (around 200 degrees F.) temperature elevations. But as the temperature rises the increase in tensile due to regain diminishes, until at 220 degrees F. the regain possesses no effect whatsoever. From 70 degrees F. to 285 degrees F. there is a 40 per cent decrease in tensile but a 60 per cent increase in elongation at equal loadings. Continuous exposure to high temperature at 255 degrees F. causes a tensile depreciation of about 1 per cent per day or so, but at 285 degrees F. the depreciation is nearer 5 per cent per day. This fact may have considerable bearing upon the life of tires. Due to the hysteresis of tire flexing in service operation the temperature rise resulting from the accumulation of heat generated may be considerable, and may reach temperatures between 255 degrees and 285 degrees F., particularly at high speed, where low pressure is employed.

Although the facts are well established, no single or simple explanation of the tensile increase of cord with higher regain is satisfactory. Increased coefficient of friction of fiber to fiber does not explain the phenomena since this coefficient actually drops slightly above normal regain. Although the wet cotton fiber is about 10 per cent stronger than the dry cotton fiber, still this difference is inadequate to explain the observed increase. The fibers swell cross sectionally by say 12 per cent from dry to normal regain, but as the space occupied by the cotton in cord is only 50 per cent this only represents an increase of say 47 to 53 per cent by volume. Still even this would on extending the cord, cause the fibers to contact at earlier extensions, thereby setting up a resistance to elongation at slightly greater total cord cross sections than were the fibers drier.

The most important factor in the explanation of why regain so increases tensile, it would seem, lies in the greater cotton fiber pliability which promotes better stress distribution and permits the concentric forces generated to be localized to smaller yarn sections, thereby increasing the concentric pressures which hold the fibers together. Twist is nothing more nor less than a friction device, but a friction device which depends on structure, and any cotton property such as increased cotton fiber pliability which modifies the adjustment of structure as stresses are applied, will tend to affect the efficiency with which interfiber friction acts to transmit stresses from fiber to fiber. It should be noted that in tire service, externally generated pressures to varying degrees still further compress the cord fibers together, so that the properties of the raw cord and the cord stretched and imbedded in rubber under pressure, may considerably differ. This divergence in properties would exist whether a stand-

ard specification test were to be applied, or a service simulating type of test.

It may be laid down as a general principle that the properties of tire cord, yarn or fabric whether from a point of view of tensile, stretch or resistance to repeated stresses can be made to approach toward the cotton fiber properties as an asymptotic limit. The nearness of approach toward the cotton fiber properties is closer, the greater the average length of fiber, or the greater the coefficient of interfiber friction or the greater the apparent density of yarn or cord. For example, if t be the cord tensile, T the cotton fiber tensile and P the product of fiber length x interfiber friction x cotton concentration (or some similar function), then the approximate exponential relation which appears qualitatively to hold would be as follows:



The facility with which cords are "wetted" or impregnated with soft rubber friction in all probability varies considerably, not only with cottons, but with type of processing. Shorter cottons are more rigid and require more "elbow room" than longer and more flexible cottons. Hence, with shorter cottons there are apt to be larger interfiber openings under otherwise equal conditions for the friction to intrude into. The more parallelized the cotton, as in combed yarns and in consequence, the closer the structure, the smaller the opportunity afforded for the friction to penetrate and anchor. Hence, longer and combed cottons, although stronger, possess certain disadvantages or perhaps require greater skill in compounding friction stocks, or possibly require thicker skim coats.

The more highly twisted cords are less compressible laterally and this would tend to hold them out tighter against the soft hot rubber friction in processing, thereby abrading off more generous layers of friction. However, higher twist is apt to close up the interstices between the fibers, thereby hindering the friction retaining capacity of the cord, so that the previously mentioned advantage is partly offset.

However, more highly twisted cords elongate more in service, subjecting the adjoining rubber parts to strains, and the greater these, the faster the contacting frictions deteriorate and lead to ply, and particularly to tread separation.

The question as to proper cord construction and cotton to be employed must be decided by each tire manufacturer independent of practices of competitors, for each variation in processing from one plant to another, or even within a plant, modifies the ideal cotton and twist requirements so that a construction suitable in one tire may be totally unsuited to another. Specifications, therefore, cannot and do not measure real merit in tire cord, nevertheless they serve an irreplaceable function in insuring or ascertaining equality of different shipments of tire cord. Each tire manufacturer must find out for his particular mode of operation the tire cord best suited by comparative tests or perhaps still better by fundamental research in conjunction with rational scientific design.

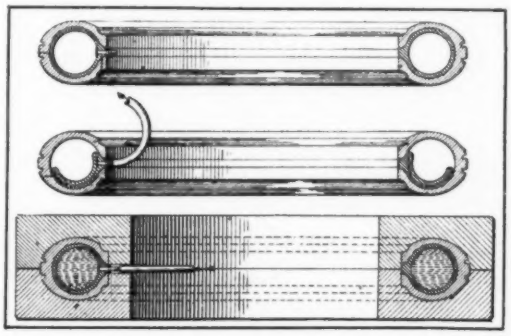
While there has been considerable improvement in the manufacture of tire cord since its adoption a few years ago, the superiority of the present day tires is largely due to improved tire building. The 6,000 mile guarantee when first offered by certain dealers was considered daring to say the least. Now a mileage from ten to twenty thousand is usually taken for granted. It should further be noted that this improvement in tires over the past few years has been accomplished with the use of less expensive cottons than were formerly used and thought essential.

The most natural question a tire manufacturer might ask is, what cotton makes the best tire? The answer must be necessarily speculative even in the presence of all the data the manufacturer would volunteer to submit. It is quite possible that shorter cottons of greatest possible uniformity of length may be more suitable. Possibly the chemical stability of cotton has a greater variability and incidence on tire service value than has hitherto been supposed and it is not unfair to assume that cotton strains may sometime be developed especially for tire users.

While the trend of future development cannot be foreseen, it seems quite probable that cotton and fabric construction will be given increasing study along with tire design.

Eliminating Air From Waterbags[1]

In curing casings by the waterbag method it has heretofore been found difficult to entirely eliminate air which collects in bubbles and pockets and acts as an insulator against heat transmission, thus causing sufficient lowering of the temperature inside the bag, and resulting in undercuring of portions of the tire commonly termed "cold spots." It is readily recognized that if it were possible to eliminate air pockets entirely quicker and more even curing could be accomplished by using water instead of air in the curing bag.



Waterbag Curing Process

According to the patent claims the inventor proposes to use a curing bag with a single valve. This bag is placed or positioned in the uncured casing in the usual manner. By means of a pump the air is then entirely exhausted and the bag collapsed. The tire and bag are then placed in the mold and the valve of the curing bag connected to a hot water supply system or line, the water temperature being 290 degrees F. or hotter and under 200 to 300 pounds pressure.

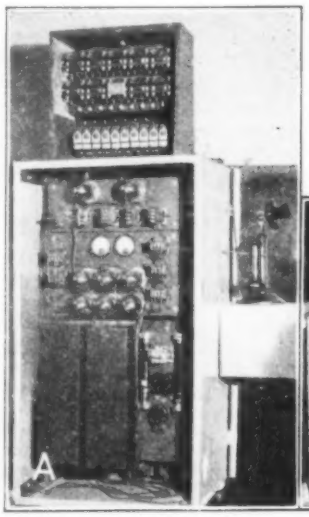
By completely exhausting the air from the bag before admitting the water, it is claimed the possibility of having air pockets and bubbles present is completely removed and the heat in the water is thus assured of even distribution throughout the entire area of the inner plies of the tire, resulting in a thorough and uniform cure. It is further claimed that the absence of air pockets decreases the time necessary for curing as the flow of heat from the water to the tire is not impaired or interrupted.

[1] U. S. Patent No. 1,642,614, Sept. 13, 1927, issued to Robert R. Jones of Akron, O.

SOME FELT HAT CLEANERS PREFER TO USE PALE CREPE rubber and also art gum (factice) rather than inflammable fluids for removing dirt, the felt being always brushed one way.

Televox Aided by the Use of Rubber

Electrical Automaton That Hears, Heeds and Answers Orders



A.—Receiving End of Televox.

B.—R. J. Wensley at the Transmitting End of His Invention.

RUBBER plays a modest but very essential part in the new electrical automaton, the televox. This strange device was given a rather spectacular demonstration in New York City on Washington's Birthday when it took telephoned commands from its creator, R. J. Wensley, switchboard engineer of the Westinghouse Electric & Manufacturing Co.'s works in Pittsburgh, and unveiled a portrait of the first President, lighted lamps, started an electric fan and a vacuum cleaner, blew a horn, and did other feats in an uncanny fashion.

The televox, Mr. Wensley says, is not, as sensational reports had it, intended to replace domestic servants or anything of that sort, but is for guarding the continuity of electrical service in homes and other places, for rerouting power flow in the event of a disaster, for watching the water supply in reservoirs, for regulating the pressure of gas in street mains, and similar prosy but important purposes. It is intended to be of especial benefit to public utility companies.

Listens, Acts and Reports

It endows, as it were, an unattended telephone with enough intelligence to answer a call, receive, understand, and correctly execute orders, and then to advise that the orders have been fully carried out. Utilizing but three tuning fork tones, corresponding to 600, 900 and 1,400 cycles, the machine when spoken into lifts a telephone receiver and in a code call first identifies itself. Its electrically-attuned "ear" hears the order which the dispatcher sends, interprets such order and so advises the sender, and if directed to do certain work performs the same and informs the dispatcher that the desired operation has taken place. When it hears "goodby" in its own language it hangs up the receiver and awaits another call.

Large central power stations are being increasingly compelled to establish small outlying stations for delivering electric current on reduced voltages and on continually changing demands, but the cost of unremitting human attention for such distributing depots is a considerable item. It is in such remote control service that the televox is expected to effect much economy, as well as in dispensing with most of the costly 2- and 4-wire special circuits and the expensive leasing of wires for supervisory control of distant distribution. Its efficiency is said to be limited only by telephone lines and overseas telephone radio. Three sets now make daily reports on the reservoirs of the Washington, D. C., water supply system; and as soon as certain changes are made to make the televox sets more compact they will be put on quantity production to fill a large demand.

Rubber Cushions and Insulates

The inventor says that the name of synthetic man, or *homo sintetico*, as the Italian papers call televox, is only fanciful; and the device has doubtless been visioned by many as a sort of a friendly Frankenstein or an Ajeeb-like contraption that instead of baffling humans at chess prefers to move about in a rubber covered body full of mysterious mechanism and performs many household chores. Mr. Wensley says that the "mechanical man" is indeed part rubber, but that the latter (apart from much insulation on wires) is used only on the inside and at vital points in the contrivance and where only molded parts of hard or soft rubber could withstand the electrical and mechanical shocks incident to millions of repeated operations. Such rubber parts include bushings, bumpers, and terminal blocks.

Briefly, the televox consists of two boxes full of coils, lamps, switches, etc., the one at the sending end having also tuning forks and a loud speaker to turn the electrical vibrations of the forks into sound. The three tones are controlled by push buttons, and the operator simply places the hard rubber "ear" of an ordinary desk telephone against the "mouth" of the box and presses the buttons in a certain order. At the receiving end is the second box with a vacuum tube amplifying device, telephone type selective units, and electric filters to separate the three tones, each operated on a different relay. Alongside the box is also a desk telephone, its hook switch being depressed by a weight capable of being lifted by an electromagnet inside the box. The receiver is in contact with a microphone forming the "ear" of the televox, the hard rubber receiver shell being cushioned from the microphone with a soft rubber circular pad to shut out stray noises. A ringing relay to the telephone bell also tells the ever-vigilant sentry when it is wanted.

FACTICE FROM RUBBER SEED OIL

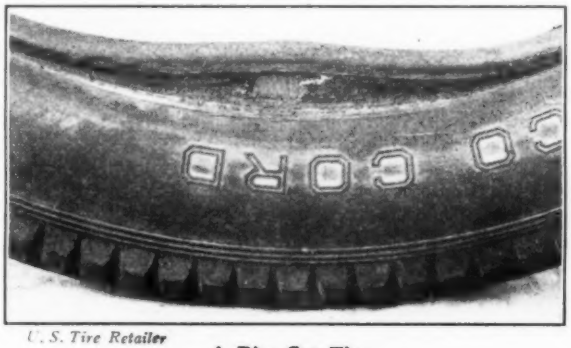
Experiments conducted by Rudolf Ditmar on the industrial uses of rubber seed oil, especially in the manufacture of factice, indicate that this Hevea product, of which better might have been expected, does not quite equal rape seed oil in viscosity. To prepare white and brown factices, rubber seed oil would require more sulphur chloride and more sulphur than other oils used for such material. But the tacky products of the Hevea seed oil are, however, good plasticizing agents for mixtures having low proportions of rubber and high proportions of fillers or of reclaim.

Clincher Rims Are Passing

A Better Understanding of the Proper Care and Operation of Clincher Tires Will Prevent Failure and Lengthen Service

HOW long will the clincher tire be with us? When will tire manufacturers be able to scrap the last of the clincher tire shop equipment? The answers vary greatly, estimates running from five to ten years before the last of the cars equipped with clincher tires will have found its way to the scrap yard. Seven years will probably see the end of this tire for all tire companies, with the exception of the larger manufacturers who will be obliged to make them so long as there is even a slight demand.

Almost two years ago the Ford company adopted the drop center rim and straight side tires as exclusive equipment, thus definitely eliminating the clincher tire as an item of original equipment. Tire manufacturers hailed the announcement with delight as it meant the gradual elimination of a product somewhat troublesome to manufacture and service. Manufacturing processes of this tire differ sufficiently from those of the straight side tire, especially in the manufacture and preparation of the bead, so that separate departments are required. The eventual demise of the clincher will, of course, eliminate these and allow of standardization of manufacture of tires with wire beads only.



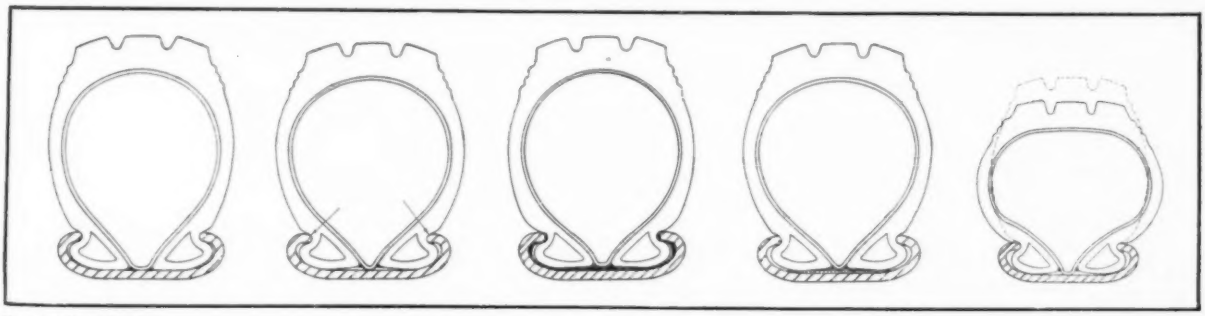
U. S. Tire Retailer

A Rim Cut Tire

From a standpoint of servicing and adjustment, manufacturers' future troubles with clincher tires are apt to increase rather than diminish, in proportion to the number in use, unless the proverbial "ounce of prevention" is used liberally and continuously until this tire ceases to be a merchandising factor. There are several reasons for this condition. Most of the original equipment rims now in use are approximately two years old and probably not in very good condition. So long as cars are fairly new the average owner, and this is apt to be particularly true of the small car owner, may be expected to take a reasonable amount of care of the rim and tire equipment but it is only human nature to become less careful as the car loses its newness. It may reasonably be expected therefore that a large proportion of original equipment clincher rims now in use will be found to be out of shape due principally to having been run while the tire was underinflated or entirely deflated.

Few laymen appreciate the fact that clincher rims are manufactured to exceptionally close dimensions and that clincher tires are made to fit these rims exactly and must continue to fit the rim if certain tire troubles are to be avoided. Any distortion of the rim shape is sure to be reflected in the tire and result in lessened mileage. Many clincher tire users fail to appreciate the value of correct inflation and that this is necessary if the tire is to fit the rim properly. Unless the tire does fit the rim perfectly, rapid wearing, abrasion or rim cutting may be expected to follow. If correctly inflated to the pressure recommended by the manufacturer, shocks incident to striking a depression or projection in the road will be largely absorbed by the tire and damage to the rim avoided. Underinflation is probably the indirect cause of most of the troubles experienced by users of clincher tires. Underinflated tires offer little protection to the rims against road shocks and when once a rim is deformed, damage to the tire results quickly. Even though the rim be not deformed low inflated tires will not retain the necessary snug fit in the clinches and the resulting rolling action not only causes rim cutting or breakdown of the sidewall above the clinch but is almost sure to damage the inner tube by pinching it between the beads or between the bead and the rim.

Misfitting between tire and rim may also be caused by rust building up on the rim which, if not removed, will eventually elevate the bead seat sufficiently to cause rim cutting. Rim rust is always a potential source of trouble in that flaking particles may chafe or puncture the inner tube. When this condition is encountered the rust should be removed by scraping or brushing and a coating of graphite solution that is approved by the tire manufacturer should be applied to the rim. This will act as a rust retardant and pre-



U. S. Tire Retailer

CORRECT FIT | BENT CLINCHER | RUSTY RIMS | RIM STRIPS | UNDERINFLATION

vent the beads and inner tube sticking to the rim. During the past few years many dealers have made use of the so-called clincher rim flap to prevent sticking or chafing of the inner tube and have thereby multiplied their troubles. Even the thinnest flap will elevate the bead enough to eventually cause rim cutting. Tire manufacturers almost without exception have protested the use of this article.

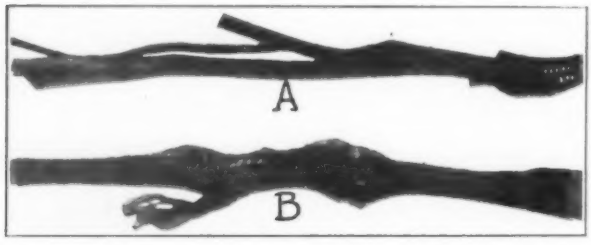
In the case of damaged and deformed rims, the best and cheapest remedy appears to be a new rim. As stated above, clincher rims are made to very close dimensions and straightening a rim to its original form, even though possible, will likely cost more than a new one and unless it is perfectly reformed the damage to the tire will continue.

As to remedial measures the best and quickest way undoubtedly is to educate the owners in the proper use and care of clincher tires through the dealers with whom they are in direct contact. In order to be effective, however, it would seem to be necessary to continually keep "hammering" these lessons and instructions home to the dealer so that he will realize the vast importance of eliminating trouble for himself and his manufacturer by informing his clincher tire customers how they may best avoid the more common causes of tire failure and profit by the lengthened service of their tires.

So long as new original equipment in clincher tires was coming on the market with the new models of cars, tire troubles could be expected to maintain a fairly steady average to the number sold. Now that clincher tires have been definitely abandoned as original equipment, manufacturers will have to be ever on the alert through their dealers, to prevent a multiplication of complaints out of all proportion to the number of tires in use, until such time as the last clincher tire has been sent to the scrap heap.

SUB-STANDARD LAMP CORD

A startling example of the worthlessness of a technical product, when made by competition uncontrolled by specifications, was brought to light recently in Boston and recorded in *Laboratories' Data*, house organ of Underwriters Laboratories.



Sub-Standard Cord

This type of cord, sample of which is here pictured, caused a number of fires. It is just another example of the desire of some lamp manufacturer to use as small a hole as possible for entrance of wires, and very bad cord construction.

The method of manufacture of this cord is shown at *A* in the picture, where one of the conductors is wrapped with the usual cotton, but this is omitted from the other conductor. Then these two conductors are apparently placed together and run through a tubing machine and a thin film of rubber forced down between the cotton-covered and bare conductor. The compound is not vulcanized and a silk braid forms the outside covering. At *B* is shown a sample of the wire as removed from a lamp, showing where a very slight abrasion has exposed the bare copper conductor, which has cut through the braid and compound. Many cases have been found where the slightest pressure has short circuited the wires and caused fires.

It seems incredible that any American manufacturer would be guilty of making a cord of this type which is such an extreme hazard to life and property.

A. C. S. Rubber Meetings

New York Group

The second meeting of the New York Group of the Rubber Division A.C.S. will be held at the Town Hall Club, 123 West 43rd St., New York City, at 6:30 P. M., Wednesday, April 25. The speaker of the evening will be Dr. David Spence, vice president of the Continental Rubber Co., who will read a technical paper on guayule rubber. Moving pictures will be shown illustrating the propagation, cultivation, harvesting and extraction of guayule as conducted at Salinas, Calif.

Tickets for the dinner can be obtained from Donald F. Cranor, care of Binney & Smith Co., 41 East 42nd St., New York City, price $2.00. It is desirable that tickets be secured early so that suitable arrangements may be completed for the accommodation of all who desire to be present. A general invitation to attend is extended to all rubber chemists and rubber technologists.

Boston Group

The first meeting of the Boston Group of the Rubber Division, A. C. S. which will be held at the Boston Chamber of Commerce on May 9, will be opened with a dinner to be served at 6 P. M. Reservations should be made with the presiding officer, C. R. Boggs, of the Simplex Wire & Cable Co.

Four short papers will be presented as follows: Theory of Reinforcing Pigments, by Dr. John T. Blake, research chemist of Simplex Wire & Cable Co.; Illustration of Reinforcing Pigments, by John M. Bierer, technical superintendent of The Boston Woven Hose & Rubber Co.; Rate of Heat Transfer in Rubber Goods during Vulcanization, by T. M. Knowland, development superintendent of the Hood Rubber Co.; and Structure of Rubber, by Warren K. Lewis, head of the Department of Chemical Engineering, Massachusetts Institute of Technology. The papers are limited to 20 minutes but will be fundamentally sound and well worthy of the attention of technical men.

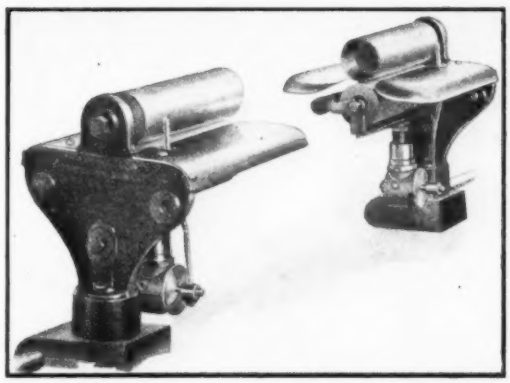
Notice of the meeting will be sent to all members of the Rubber Division in Boston and vicinity as well as to all of the rubber companies. A large representation of rubber men is desired at this, the first meeting of the Boston group of rubber chemists.

DUNLOP LEADS IN JAPAN

Over one-half of the automobile tires used in Japan are said to be the product of the extensive Dunlop rubber works in Kobe, operated with British and Japanese capital. It is also stated that the bulk of the other rubber goods used in the island empire, such as bicycle and jinrikisha tires, hose, tubing, and waterbags, are Dunlop-made. The General Motors and Ford assembling plants in Japan are said to use Dunlop tires exclusively. The Kobe factory has a very efficient personnel, is equipped with modern machinery, much of it American-made, and although production is some 2,500 a day, unfilled orders are mounting. Most of the 2,000 workers are women, all on piece work, and rapid operatives make good pay. A considerable part of the output is exported to Asiatic countries. The Philippine markets are supplied by the British Dunlop concern, and the Hawaiian by the American Dunlop factory.

Pneumatic Fabric Guider[1]

The Textile Industry Offers a Machine of Demonstrated Utility to the Rubber Industry for More Efficient Calendering, Rubberizing and Other Operations



Foxwell Pneumatic Guiders and Feeders

AN interchange of machinery between manufacturing industries frequently occurs, and the rubber industry is no exception in this respect. For example ordinary 2-roll mixing mills and washers are developments of sugar cane crushers. Many similar adaptations might be cited concerning equipment found in modern rubber plants along with a mass of machinery specially designed for processing rubber.

This article is concerned with a pneumatic guider and feeder for textile fabrics. It is of English invention and American development and is much used on machines for tentering, drying, calendering, dyeing, printing and otherwise treating textiles. Rubber workers engaged in calendering, rubberizing and operating roll-up machinery will appreciate its advantages.

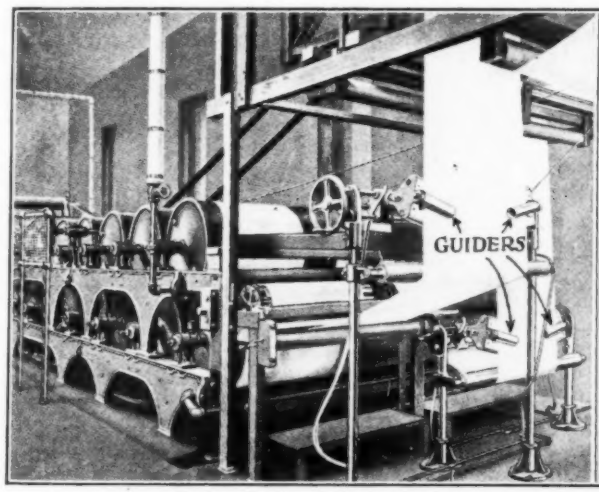
Those with factory experience well know that textiles passing through rollers have strong tendency to assume a serpentine course and travel from side to side. This condition is oftentimes counteracted by hand control of the fabric feed. This operation, however, requires constant attention by two operatives and even then the course of the fabric is not absolutely straight.

Various devices are often applied to maintain the guidance mechanically. These succeed better and of course release the hand feed operators. Usually they consist of stationary bars with right and left hand coarse threads running each way from the center. Such bars are placed between the roll of fabric and the bight of the calender rolls. The effect of the right and left threads is to smooth out all creases in the goods and keep it to width. The spreader roller, however, does not serve to accurately guide the edges of the goods in exact straight course. Often the roll of fabric itself may need shifting to right or left and this requires hand labor.

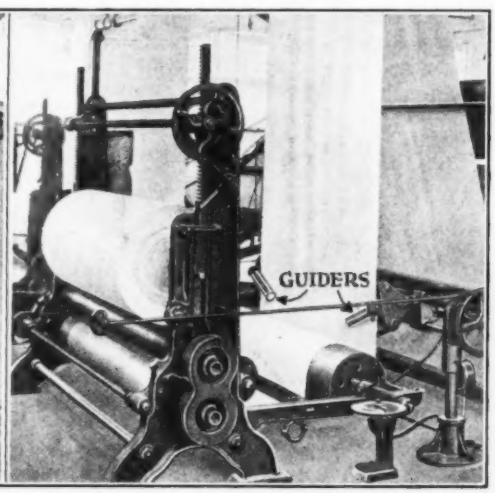
The pneumatic guider and feeder referred to above is extremely well known in textile dye houses and finishing plants here and abroad. It consists of an iron casting supporting a pair of short rollers set one above the other. The lower roller is rubber covered and the upper one is of brass and journaled only at the end toward the supporting casting. Either side of the rollers and of the same length with them, is located a small brass shelf with rounded edges over which the goods pass into and from the mentioned rollers. Immediately below the rollers is located a pneumatic cylinder the operation of which is controlled by the sidewise movement of a lever projecting upward through the brass shelf on the feed side. The guiders are so mounted on either side of feed end of a given machine that their distance apart can be adjusted to the exact width of the goods by means of a hand wheel and screw.

In the passage of fabric through a pair of these guiders, should it tend, for example, to enter the calender unevenly, one edge or the other of it instantly touches one of the upright fingers or tips of the valve operating levers. When this finger

[1] Data contributed by H. W. Butterworth & Sons Co., Philadelphia, Pa.



Foxwell Guiders Applied to Can Drier



Foxwell Guiders Applied to a Wind-up Stand

is moved by the pressure of the goods, it opens a valve, which revolves the pair of guide rollers on that side. As these are set at an angle to each other they nip the material between them and straighten it sufficiently to center it in the calender.

The device is thus actuated from a valve worked by compressed air at 30 pounds. Attempts to drive similar machines by electricity have not proved dependable. The pneumatic principle of operation was perfected by the American makers of the guider, as the only means of securing operation uninterrupted by stoppages or adjustments. While this device is not unknown in American rubber industry it has fully demonstrated its practical value in textile plants.

The Rubber Situation

A. A. Garthwaite

Vice President and General Manager Lee Tire & Rubber Co.

Some five years ago the British Government realizing the unstable market price of crude rubber, passed the Stevenson Restriction Act. American buyers doubted the efficacy of this legislation, but accepted it as a gesture of good intentions. Meanwhile the Dutch plantations in Java and Sumatra, unhampered by any suppression, kept on planting. From 1922 to 1927 the Dutch increased production 300 per cent.

The failure of the Stevenson scheme was evident in 1925. This was not because the British planters did not restrict output. They certainly did, and to such an extent that early in 1925 world stock declined to an alarming minimum, and then the old law of supply and demand got in its work. Prices jumped from 30 cents a pound January 1 to $1.17 July 1, 1925. Then came a gradual decline to $1.04 by the end of the year, and a serious collapse to 40 cents by the middle of February, 1927. The net of restriction is that it works, but sometimes works as negatively as it theoretically does positively.

One big rubber manufacturer broadly advertises that America should grow its own rubber, and of course we all applaud such sentiment, but realize it will take years and years to accomplish such a laudable undertaking. Lately the General Motors has concerned itself with the matter, because it measures net profits accurately, and with rubber jumping a uniform price on big purchases is out of the question.

We all have heard that Premier Baldwin of Great Britian has concerned his august office in this matter. Perhaps we should be lulled to a greater degree of complaisance because of his interest. However as we look at it, evidently the British Government means to obviate sudden price raises.

As it happens, however, the Dutch plantations now produce *more* rubber than the British. The Dutch gains have been startling. In 1922 at the time of the Stevenson scheme the Dutch produced 25 per cent to the British 75 per cent. In 1927 55 per cent was Dutch and 45 per cent British.

It is evident that whatever Premier Baldwin does will not suffice. Not because he is not willing, but because the Dutch are too strong and independent. Perhaps, just perhaps, the recent drop in rubber may have come from some cause other than lessened demand. Perhaps the British are trying to avoid the grouping of American buying interests. Perhaps the British hope for a cessation of the pressure now being made on Congress to permit pool buying.

Certain it is that permanent stability to the rubber market can only come when the American buyers and *both* the Dutch and the British get together on a platform of mutual interests.

The time must not be far distant when the big buyer and the big seller will have some intelligent understanding which will enable retail prices to assume a basis which will assure dealers, car manufacturers, and consumers that the rubber industry has settled to a point where confidence and not distrust will be in the ascendancy.

SUMMARY BY YEARS OF PNEUMATIC CASINGS—TUBES—SOLIDS

PRODUCTION

	1927	1926	1925	1924	1923	1922	1921
Balloon casings	26,037,452	21,824,489	15,567,644	4,428,074	.....	.....	.....
High pressure cords	21,525,278	21,800,096	23,631,807	22,798,810	19,488,762	14,933,485	6,248,101
High pressure fabrics	766,581	2,479,616	6,433,865	11,498,309	14,455,174	15,764,654	15,571,678
Total pneumatics	48,329,311	46,104,201	45,633,316	38,725,193	33,943,936	30,698,139	21,819,779
Balloon inner tubes	25,718,529	23,502,653	16,096,518	3,804,824	.....	.....	.....
High pressure inner tubes	27,398,535	33,961,154	45,864,008	49,224,256	45,086,847	38,137,181	27,102,206
Total inner tubes	53,117,064	57,463,807	61,960,526	53,029,080	45,086,847	38,137,181	27,102,206
Solid tires	468,805	479,617	619,416	557,680	692,148	786,603	424,252
Cushion tires	89,225	82,424	139,484	124,333	.....	.....	.....
Total solids and cushions	558,030	562,041	758,900	682,013	692,148	786,603	424,252

SHIPMENTS

	1927	1926	1925	1924	1923	1922	1921
Balloon casings	25,111,903	20,375,843	14,628,137	3,551,325	.....	.....	.....
High pressure cords	21,733,962	21,359,511	24,233,819	22,525,595	18,806,446	13,826,536	6,600,235
High pressure fabrics	1,198,549	2,517,726	5,584,722	11,512,566	15,087,041	16,165,022	16,669,107
Total pneumatics	48,044,414	44,253,080	44,446,678	37,589,486	33,893,487	29,991,558	23,269,342
Balloon inner tubes	25,143,821	21,366,799	14,856,699	2,992,128	.....	.....	.....
High pressure inner tubes	29,528,108	32,327,262	45,897,316	48,019,665	44,303,941	37,254,416	27,795,273
Total inner tubes	54,671,929	53,694,061	60,754,015	51,011,793	44,303,941	37,254,416	27,795,273
Solid tires	477,154	458,294	656,721	558,620	736,124	723,795	550,920
Cushion tires	80,853	84,193	143,674	113,434	.....	.....	.....
Total solids and cushions	558,007	542,487	800,395	672,054	736,124	723,795	550,920

	CONSUMPTION (Casings, Tubes, Solid and Cushion Tires)			PRODUCTION (100%)	
	Cotton Fabric Pounds	Crude Rubber Pounds	Gasoline (100%) Gals.	Passenger Cars	Trucks
Total (1924)	142,415,356	453,845,546	7,780,625,085	3,243,285	374,317
Total (1925)	168,295,927	552,389,272	9,325,094,000	3,817,638	496,908
Total (1926)	165,963,182	518,043,062	10,766,451,000	3,929,535	535,086
Total (1927)	160,742,261	463,661,466	11,220,342,000	3,085,738	487,585
December	11,949,002	32,653,772	963,900,000	108,061	28,552

Rubber Association figures representing 75 per cent of the industry.

The Fine Art of Rubber Tapping

Fig. 1—A Special Knife, a Spout to Guide the Latex, and a Cup to Receive It—These Are the Rubber Tapper's Tools

TAPPING rubber trees is an art that has been developed to a high degree on all rubber plantations. The operation of excising that thin shaving of bark so as to induce a flow of latex from the inner bark to the cup is perhaps the most important task on a well managed estate. From the accompanying illustrations a better idea of this work can be obtained than is possible by word description alone.

Most people know rubber as it comes on the market in prepared or processed forms—as "sheet" or "crepe" or as the vulcanized product. But the plantation worker knows it as it is in the crude or raw state just as it comes from the tree. In this state, the rubber is a fluid which looks very much like cow's milk. If you were to be shown a cupful of rubber latex and one of cow's milk you could not tell them apart. The rubber fluid is called "latex" which is a Latin word meaning milk.

Latex Is Made to Flow

Imagine a tree with soft, smooth bark. It is one of millions in the vast area devoted to plantation rubber in the world today. The base of this tree is at least 21 inches in diameter at a height of 18 inches from the ground. It has been measured and marked ready for tapping. A native laborer, called a "coolie," detailed for this work has come to this tree. He has a measuring device as shown in Fig. 2. This device consists of an upright stick, 18 inches high to which is attached at right angles a crescent-shaped piece of wood. The concavity of the crescent corresponds to what the outside dimensions of a minimum-sized tappable tree should be. The coolie applies the measuring instrument to the tree; if the trunk fits into the crescent, he places at shoulder height on the trunk a special mark that means this particular tree may be tapped. On his measuring device in the illustration you can see the small tin of tar and the brush which he uses to mark with. There may be ten thousand or more young trees that have to be measured. So he quickly moves from this tree to the next. When 60 per cent or more of the trees in one section are of the minimum size or larger the section is brought into the regular tapping round.

Now look at Fig. 3. Here you see a coolie marking the cut, after which he makes an incision at 18 inches above the ground and on one-third the circumference. The cut continues at an oblique angle into the long straight incision leading to the ground. This coolie is detailed to mark the young trees with this pattern of the tapping system. All the trees are thus marked when first tapped. These initial incisions serve as a guide to the regular tapping coolie whose task it is to make successive incisions for latex gathering as is shown in Fig. 4. The initial tapping system marks do not penetrate to the deeper-lying latex tubes. The slope of the oblique incision has been determined beforehand as desirable and is maintained throughout the tapping to permit the easier flow of the latex. The long straight channel is never deepened; it serves only as a guide for the placing of the spout and as a boundary of the next tappable surface.

We Come to the Tapping

Now look at Fig. 1. Notice the cups. There are several types. Of those shown two are of porcelain and two of glass. Both kinds are in use. Size, shape and material are all products of a trial and error process. For the art of tapping as practised today is the culmination of years of careful observation, study and experience of many men. You also see what appear as two farrier's knives. These are tapping knives—the so-called "jebong" knife used extensively in Sumatra for excising the bark. You get an idea of how this knife is held and used by looking again at Fig. 3 or at Fig. 4.

The curved piece of material in Fig. 1 is the spout. It is galvanized tin, is about two inches long, slightly curved and is inserted into the bark at the foot of the tapping cut. This is well shown in Fig. 5. On the better estates the spout is always about two to three inches below the end of the tapping cut. When the cut is high up, the cup is suspended on a wire or placed in the fork of a split bamboo stick so as to bring it close to the end of the tapping cut. This is important and is for the purpose of catching all the latex as it flows from the cut, rather than allow the latex to flow down a long channel on the trunk to the ground. In the latter case the latex would coagulate on the trunk and form "scrap" rubber, of lower market value; whereas, if caught in the cup, it is made into the best market grade.

The spout and cup being in place, we are now ready to

Fig. 2—Measuring Device.

Fig. 3—Marking the Cut.

Fig. 4—Tapping the Tree. Fig. 5—Measuring the Latex.

tap. Applying the knife we carefully shave off a very thin section of the bark just as the coolie is doing in Fig. 4. The bark shaving must be about 1/30-inch thick and deep enough inwardly so as to cut across all the latex vessels without at the same time touching the minute layer of living tissue called the cambium lying between the bark and the wood of the stem. In Fig. 4, the tapping represents about 13 months' tapping. The bark consumption should be at the rate of 1 inch a month if daily tapping is practiced. This is to permit a healthy renewal of the bark so that at the end of the tapping cycle we come back to tap this renewed bark. If you wound the cambium, there may form nodules or excrescences or rough uneven bark which makes subsequent tapping difficult if not impossible.

Collecting the Latex

The latex has ceased to flow after an hour or so following the tapping. One coolie taps about 400 trees as his task. He now must collect the latex. There flows from each tree from one-third to one-half an ounce of latex at each tapping. Only about one-half of this is real rubber or caoutchouc. Calculating about one hundred to one hundred fifty trees to the acre, the yield per acre amounts to roughly one and a half to two pounds of rubber a day; in old stands, a good average yield with fewer trees per acre, is one pound per day. Let us follow the coolie collecting the latex.

The coolie takes the cup of latex, pours the milk into a collecting can (our regular milk can) washes out the cup, pours the wash water into a second can and goes to the next tree. Some estates do not wash out the cup; they collect the rubber residue later in the day or the following day as a thin rubber film. Once a month the coolie measures the quantity of latex given by the tree as is illustrated in Fig. 5. A mark is placed on the tree which corresponds to the yield. At the end of a year these marks prove a valuable guide in assessing each particular tree's yield capacity.

And Now to the Factory

Having finished the collection of the latex from the trees comprising his task, the coolie now takes it to the estates' central factory. In the main factory the latex is poured into huge tanks and coagulated by means of a measured amount of acetic or formic acid. The coagulum is then cut into weighed chunks and passed through rollers for making it into measured lengths of either "crepe" or "sheet." If "sheet," then the lengths of rubber are put into a smoke house and subjected to a smoking process.

On several large estates at the present time, the latex is given some ammonia to prevent its coagulation and is then led into huge tank cars for shipment as latex to factories in the United States. Latex is used directly in many processes, such as the dipped cord process for strengthening the cords of automobile tires. The percentage of latex thus used is small, however, and the big bulk of rubber still comes to the market in the form of smoked sheet or crepe.

The illustrations used in this article were taken on the plantations of the United States Rubber Co., in Sumatra, Netherlands East Indies.

ENGRAVED COLOR PRINTING ROLLS

A recent English printing trade development makes use of engraved rubber rollers for color printing. A special grade of rubber is used for this purpose, of such hardness as will permit its surface to be engraved by a hand graver, in very high relief, from two to three millimeters. Such rollers give three times longer service than rollers covered with rubber sheets upon which raised designs have been molded.

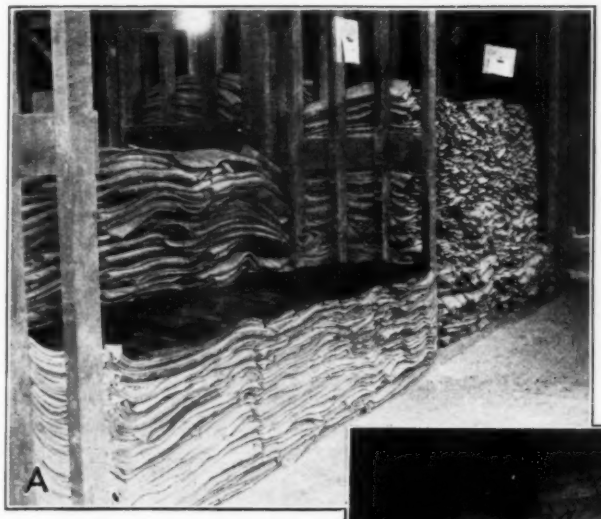
A press built for this type of color printing requires in addition to its large rubber covered bed roller, three color feeding rollers, and one engraved rubber impression roller for each color. Thus a four-color press has sixteen-color rollers. The color feed rollers are covered with very soft rubber. The first of each group revolves partly immersed in the color fountain and contacts with the second roller in the group to which it transfers color more or less evenly. The second roller contacting with the third continues the transfer and effects its even distribution. Thus the third roller applies color to the engraved printing roller with perfect uniformity, the amount of color being adjustable by the relative pressures between the feeding rollers.

The press is rotary and the paper fed from a roll passes around the bed roll or drum where the surrounding engraved rubber printing rollers each in turn apply the different colors of the design or text. The speed of the printing is about 20-30 yards a minute, giving a daily capacity of 10,000 yards per day for each press.

The rubber covering on the engraved rollers is about ten millimeters thick, made up of three millimeters of ebonite next the metal core and seven millimeters of tough stock. The engraving is a special operation and requires great care. It can be done only by specially trained workmen and the softness of the material does not allow of lines finer than one millimeter in width.


The Rubber Cushion Principle

Courtesy Automobile Topics



Storing and Shipping Reclaim[1]

ALTHOUGH reclaimed rubber is made from worn out and waste rubber articles, chiefly pneumatic tire casings, and inner tubes, the production of a reclaiming plant is remarkable for the uniformity of its grades as to gravity, physical properties and freedom from grit. This condition results from the constant exercise of care at every stage of the process of manufacture from sorting the scrap, preparing, processing, finishing, storing and packing it for shipment.

Reclaim is no longer regarded, as in the earlier years of the industry, merely as "shoddy." The application of engineering methods to plant equipment and chemical control over processes and product have produced refined products that rank in importance and reliability with any compounding ingredient. Thus, reclaim ranks as an adjunct to crude rubber of much technical value, and this is true whether the crude is cheap or dear. In the latter case reclaim has particularly good market value.

In view of these facts the handling of finished reclaims becomes of as great importance as any other feature of its progress from scrap pile to the compounding rooms of the rubber goods manufacturer.

The group picture here shown represents views in the stock rooms of one of the leading American reclaiming plants. *A* represents stock of tire reclaim dusted and piled ready for car load lot shipment. This is the condition in which the refined batches are received from the mill room where they were finally processed. *B* is a view of tire reclaim that has been cut and folded into convenient shape for bagging. *C* shows a lot of bagged reclaim ready for shipment. The usual weight runs about 120 pounds per bag.

Whether reclaim is bagged or not depends entirely upon whether the goods, when they leave the reclaimers storehouse incidental to their transportation, are liable to exposure to dirt or the elements. Bagged lots are usually, but not always, less than carload lots, and destined to be reloaded at some transfer point, for export or to be delivered for transit at some railway or steamer freight house to be shipped with miscellaneous merchandise. Frequently large orders destined for car load shipment are necessarily bagged for storage to safeguard the material from becoming contaminated during the indefinite period of awaiting shipping instructions.

Bags for domestic shipments differ from those for export shipments. The domestic bag is made seamless of cotton. The export bag is made double, the inner bag being of high grade sheeting and the outer bag of special calender burlap.

Cars for bulk shipment of unbagged reclaim are swept out clean of wood, dirt, nails, etc. The floor is then covered with new strong manila paper and the sheet stock as pictured in illustration *A* is solidly packed. The presence of a dust coat of whiting or talc on all grades of reclaim serves to prevent adhesion of the sheets and allows stray foreign matter to be easily brushed off.

[1] Data and illustrations from U. S. Rubber Reclaiming Co., 100 East 42nd St., New York.

BENZOL FROM PETROLEUM

For the first time it is now possible to secure benzol on a commercially practical basis from low grade fuel oils, tar oil, or crude petroleum whether these sources are in their crude form or waste products. The basic principle of the process is the vaporizing of fluid hydrocarbons in combination with nascent steam into steam charged hydrocarbon vapors of uniform constituents which can then be treated by well known methods for the production of the principal commercial products derived from petroleum. A yield of 20 per cent of benzol is said to be possible from crude oil handled by the new process.

EDITORIALS

When Rubber Stabilizers Clash

THE recent sharp slump in rubber prices has been variously ascribed to the American projects for rubber growing, the government's urge of conservation, the abundance of better reclaim, the restiveness of curbed British planters, the mounting output of free Dutch rubber growers, the likelihood of Congress legalizing collective buying, and the operations of the American rubber purchasing agency. While the other influences were all helpful, some of them very much so, it was the last-named factor that plainly exerted the most direct force of all in bringing rubber prices within a reasonable range.

The Stevenson Act was designed ostensibly as a regulatory measure, a "stabilizer" of prices in a distracted market, and many leaders in the American rubber industry, willing to give the plantation interests a chance to rehabilitate their depressed industry, pleaded that it be given a trial. It was not long, however, before the main purpose of the plan was revealed—to levy the utmost the traffic would bear. Prices were inflated beyond all reason, buyers had no recourse but to stand and deliver; and the profiteers, like the impeached British Indian governor, when they considered the magnitude of their opportunities, were amazed at the moderation of their demands.

Direct appeals for a fair give-and-take agreement passing unheeded, diplomatic intervention also availing nothing, tangible relief came at last through a new instrumentality, the American buying agency. It was that strong group of rubber manufacturers that through astute methods in purchasing finally cut the gordian knot that chafed consumers. It proved that two could play at the price control game, and striking the Restriction Scheme in its most vulnerable spot it discredited it even among its ardent supporters. The stout staff on which they had leaned proved but a reed when the new stabilizer challenged their old champion.

Reaction in Foreign Loans

AMERICANS are willing to help foreign nations through industrial loans to regain prosperity and to enable them to buy more American products, as well as to reduce war debts; but if the borrowed money is to be used, as may happen, in so aiding manufacturers abroad that even despite the tariff they may be able to undersell Americans in the latter's home market, perhaps forcing some to quit production and compelling consumers here to again pay monopoly prices, or even to so manipulate credits as to undermine American competition in neutral markets, a serious situation might arise.

Rubber and other manufacturers who have been buying essential ingredients at moderate prices from concerns established in the United States since the war, and who might suffer keenly from insidious assaults on American enterprise, can not but view such loan flotations with anxiety and can not but hope that the vigilance of the State Department will not be relaxed. So, too, as bond sellers can not be expected to forecast possible boomerangs, investors must look to it that they do not, attracted by high interest returns, so loan funds that in benefiting others they also raise up a rod to beat themselves. The ultimate uses of loans can sometimes be quite different from their asserted purpose.

Gutta Percha from Rubber

A FEW years ago it was suggested in this journal that a worth while achievement would be the transforming of gum elastic into gum plastic, and that if our chemists would but turn the abundant india rubber into the less plentiful but valuable gutta percha they would help the arts enormously. Recently this desideratum has been remarkably approximated in the transmutation by an American research worker, Harry L. Fisher, of rubber into isomeric hydrocarbons similar not only to gutta percha and balata but also to shellac. Even though these new thermoplastics be not precisely identical with rubber (their molecules being, it is stated, less unsaturated), they will be prized, as tests have already indicated, as important insulating and adhesive materials and even preferable for many articles in which the synthetic resins have seemed to have a unique merit.

Reduce Corporation Income Tax

AMERICAN rubber manufacturers have much at stake in the proposal now pending at Washington for the reduction of the unreasonably high income tax on corporations, and it behooves them not merely for their own advantage but for that of industry generally to do their utmost toward getting such load lightened. It is figured that even the conservative cut of but 1½ per cent as proposed would mean the release of over $100,000,000 for the stimulation of business yearly, an advantage which easily outweighs even further reduction in national debt or the dubious disbursement of such a sum in expanding governmental activities.

IT was once remarked by this journal that rubber would yet be used for making both still and activated reproductions of the body and its organs for school use. It is pleasing to note that the idea has materialized and that remarkably durable, realistic, perfectly practical rubber manikins are now being made in the Northwest to replace human remains in medical schools.

What the Rubber Chemists Are Doing

Rubber Aging by Certain Metallic Salts[1]

BERT S. TAYLOR AND WEBSTER N. JONES
The B. F. Goodrich Co., Akron, O.

AMONG rubber technologists it is generally accepted that certain metallic salts, such as those of manganese and copper, are deleterious to the aging of vulcanized rubber. The higher fatty acid salts of copper, manganese, iron, and mercury were chosen for investigation, because they disperse well into rubber and because there is a possibility that these materials might accidentally be present in such softeners as palm oil, stearic acid, pine tar, and petroleum products used in rubber compounds.

The accompanying table summarizes the results obtained from the aging tests.

DATA ON METALLIC SALTS IN STOCK

Press cure, 45 minutes at 149° C. (300° F.). Tensile in kg. per sq. cm.; elongation in per cent

	Bierer Bomb Test* Time in Bomb								Geer Oven Test† Time in Oven						
	Original		48 Hours		96 Hours		144 Hours		5 days		9 Days		14 Days		Appearance and Feel After Bomb Test
Salt in Stock Per cent	Tens.	Elong.	Tens.	Elong.	Tens.	Elong.	Tens.	Elong.	Tens.	Elong.	Tens.	Elong.	Tens.	Elong.	
Blank	259	677	172	583	79	376	50	307	211	600	182	570	98	392	Remains soft
Cupric Stearate															
0.001	249	683	110	423	57	288	43	218	174	457	128	397	88	255	Same as blank
0.005	249	685	128	535	44	307	55	328	175	547	131	475	90	345	Same as blank
0.01	237	690	115	510	48	332	39	248	166	500	135	492	92	350	Same as blank
0.05	265	685	59	325	32	120	44	93	170	427	110	367	81	270	Same as blank
0.1	256	709	47	339	48	9	Deteriorated	...	177	565	91	325	91	340	Brittle
0.2	247	685	23	0	Deteriorated	...	...	...	174	540	86	333	84	310	Brittle
0.5	255	673	Deteriorated	...	...	...	...	...	179	552	87	325	84	320	Brittle
Blank painted with $CuCl_2$ soln.	259	677	123	505	34	230	22	185	205	580	169	528	131	435	Brittle after 144 hours
Manganic Oleate															
0.1	256	665	67	368	41	288	34	205	181	545	143	470	111	407	Brittle
0.5	251	682	32	78	20	0	Deteriorated	...	138	490	106	413	97	378	Brittle
1.0	236	653	13	10	Deteriorated	...	...	...	111	455	84	362	66	303	Brittle
Ferric Stearate															
0.1	257	709	146	555	65	385	41	224	181	583	89	368	81	357	Same as blank
0.2	252	688	137	570	58	328	41	231	165	533	79	293	75	287	Same as blank
0.5	248	665	73	413	42	264	Deteriorated	...	124	527	99	357	61	225	Brittle
Mercuric Stearate															
0.1	261	638	122	463	67	338	47	240	208	546	169	538	122	438	Same as blank
0.5	260	627	131	498	71	355	46	230	212	545	166	517	134	418	Same as blank
1.0	267	653	117	453	65	293	48	228	219	567	174	545	128	420	Same as blank

*At 70° C. and 20 atmospheres oxygen. †At 70° C.

Salts of the four metals considered—iron, copper, mercury, and manganese—have all been used as catalysts of either oxidation or reduction in various media and under various conditions. All these metals form at least two oxides. The soaps of these metals and various others serve as driers in oils. This is claimed to be due to intermediate peroxide formation. Such peroxides, if formed in rubber compounds, might have a marked influence on their aging qualities.

Procedure

In order to avoid variability in milling, portions of a 200-pound batch of the basic tread stock, mixed on a large mill, were blended on a laboratory mill with the proper amount of master batches of the various salts consisting of 90 per cent basic stock and 10 per cent of the salt in each case.

COMPOSITION OF TREAD STOCK

	Per cent
Rubber	60.0
Sulphur	2.5
Zinc oxide	5.0
Gas black	25.0
Softeners	7.0
Accelerators	0.5
	100.0

[1]Presented before Division of Rubber Chemistry at 74th meeting of Amer. Chem. Soc., Detroit, Mich., Sept. 5 to 10, 1927.

Certain Aryl-Substituted Biguanides[1,2]

G. B. L. SMITH AND A. J. WEISS

AS ONE chapter of a series of investigations in progress in this laboratory on the preparation and properties of aryl-substituted biguanides, their activity as accelerators of vulcanization of rubber was studied with the hope that some light might be thrown upon the relation between chemical constitution and accelerator action within this group of substances.

Substituted biguanides, α-phenylbiguanide or their carbonates or carbamates, have been patented as vulcanization accelerators.[3] Romani[4] studied the activity of α-phenylbiguanide and its salts, and concluded that, in general, the mechanism of accelerator action of these compounds was yet to be explained. Recently work has been carried out in the systematic examination of groups of pure substances as accelerators of vulcanization in order to extend the existing theories of acceleration by studying the relation between activity and the chemical constitution of the substituted radicals. The work on mercapto-benzothiazoles,[5] substituted guanidines,[6] and diaryl thioureas and diarylguanidines[7] are contributions to this subject. These studies have shown that activity increases, in general, with increase in molecular weight in homologous series and, among tolyl isomers, decreases from ortho to para derivatives in the case of thioureas and from para to ortho derivatives in the case of the guanidines. Electropositive groups increase and electronegative groups decrease activity. Compounds must be basic but their activity by no means varies with basicity.

[1] Abstracted from *Indus. & Engr. Chem.*, Mar., 1928, pp. 298-300.
[2] Abstract of part of the thesis submitted by Mr. Weiss in partial fulfilment of the requirements for the degree of bachelor of science in chemistry at the Polytechnic Institute of Brooklyn in June, 1927.
[3] British Patent 201,912 (July 27, 1923).
[4] *Caoutchouc & Gutta-percha*, 20, 12005 (1923).
[5] Sebrell and Boord, *Ind. Eng. Chem.*, 15, 1009 (1923).
[6] Ellery and Powers, INDIA RUBBER WORLD, 75, 3 (1926).
[7] Naunton, *J. Soc. Chem. Ind.*, 44, 549T (1925).

Conclusion

1. Aryl-substituted biguanides are rubber vulcanization accelerators of moderate activity.

2. The relation between the chemical constitution of the substituted radicals and the activity of the biguanides is, in general, about the same as found by other investigators for other types of accelerators.

3. α-*o*-Tolylbiguanide has a fairly great activity in certain commercial rubber stocks.

Protective Paint from Rubber[1]

HAROLD GRAY
The B. F. Goodrich Co., Akron, Ohio

RUBBER has long been considered for use in the paint industry. Certain of the physical properties of suitably compounded rubber—such as resilience, resistance to shock, low permeability to moisture, high resistance to abrasion, and its characteristic strength—make it a very promising starting material. Several attempts have been made to utilize its unusual properties. For instance, a small amount of rubber has sometimes been dissolved in the oil in regular lead and oil paints. No doubt in some cases this was for advertising purposes only, but in others a determined effort was made to utilize the physical properties of the rubber to give an improved product. Derivatives of rubber have also been tried, but without much success. The chlorinated product is apparently the only one that has found any commercial application, and that is very limited.[2]

A number of patents have been issued dealing with paints and varnishes made from hard rubber.[3] Whether or not any of them ever reached the market, they did not achieve any considerable commercial success.

Heretofore the use of the rubber hydrocarbon as such has been impractical, for a number of reasons. Solutions of rubber in organic solvents, so-called "cements," are very viscous and it is necessary to use low concentrations. Dilute solutions—say 2 to 5 per cent—are difficult to handle as far as brushing, spraying, dipping, etc., are concerned. After a film has been deposited, it is not satisfactory, owing to its tacky nature, until it is vulcanized. This could be made an air curing process, but at least several days would be required. Small objects could be cured in heaters, as is now done with baking paints, but such a process would limit the use of the paint too closely. Even were it possible to obtain a smooth, even coat wherever desired, there would be difficulty in obtaining a proper cure, as frequently considerable trouble is encountered in vulcanizing films deposited from a cement.

In the course of an extended series of investigations started by Fisher,[4] there has been perfected in the Goodrich laboratories a technic for modifying the properties of rubber hydrocarbon by means of a change other than vulcanization. A series of products ranging from a tough, horny, balata-like substance to a brittle, pulverizable material resembling shellac is made available by this treatment. The hydrocarbon (which throughout this paper will be designated as "thermoprene") is very pure and has many unusual properties which make it a promising starting material for paints. The outstanding point of interest to the paint chemist is that the concentration of thermoprene in the solvent can be as high as 10 to 20 per cent and still be within the range of good brushing products. The chief difference between thermoprene paint and those previously made with a raw rubber vehicle is that the former resembles a lacquer in that it needs no vulcanizing or curing operation.

[1]Presented as part of symposium on lacquers, surfacers and thinners before the Section of Paint and Varnish Chemistry at 73rd meeting of Amer. Chem. Soc., Richmond, Va., April 11 to 16, 1927.

[2]Lamble, *Oil Color Trades J.*, 57, 1,250 (1920); *Kolloid-Z.*, 29, 150 (1921); *Caoutchouc & Gutta-percha*, 16, 9,811 (1919).

[3]British Patent 243,966 (1925) on rubber varnishes is an example.

[4]*Ind. Eng. Chem.*, 19, 1,325 (1927). INDIA RUBBER WORLD, Jan. 1, 1928, 71-72.

Properties of Rubber Paint

The resistance to acids, alkalies, corrosive gases, and corrosive chemicals in general is very good. Examples are sulphuric acid, sulphur dioxide, sulphur trioxide, hydrochloric acid, hydrogen sulphide, sodium hydroxide, sodium hypochlorite, and calcium hypochlorite.

Low permeability to moisture, desirable in any paint, is shown to a remarkable degree by films of thermoprene. A molded sheet (7 by 7 by 1/20 inch) gained 0.365 per cent in weight when immersed in water at + 1 to + 2 degrees C. for 345 days. Panels covered with the paint and immersed in water show practically none of the discoloration caused by moisture penetration. The importance of this very useful property is shown by the remarkable results obtained with the paint in salt water, salt spray, and under moist conditions in general.

Any paint to be of value must adhere firmly to the surface it covers. The high degree of adhesion of the new paint is one of its most important properties. It is practically impossible to separate the film from the underlying surface without actually cutting it. When the film is cut with a knife it does not shatter or flake. The cut or scratch is clean and only the portion actually in contact with the cutting device is affected.

The film is very elastic, as shown by the fact that a piece of steel (4 by 2 by 1/16 inch or 10 by 5 by 0.16 cm.) covered with three coats of thermoprene and cooled to —18 to — 17 degrees C. can be bent double without injury to the film. A sharp blow with a hammer results in nothing more than the cutting of the film at the point of contact.

Another rather unusual feature of the paint is its resistance to sudden temperature changes. In one series of experiments the films (on steel) were cooled in an ice-salt bath and then put on a hot plate at 115 degrees C. After 15 minutes on the hot plate the panels were plunged into the ice water again. This cycle was repeated ten to fifteen times with no apparent effect on the paint films.

Any desired pigment can be used in the paint and any color except a pure white can be obtained. The amount of pigment can be varied widely. The possible range extends from no pigment at all to as high as 250 or 300 volumes of pigment to 100 volumes of thermoprene. The practical range is yet to be determined. Good results are obtained with 70 volumes of pigment. Color may be imparted by organic dyes, using a white pigment as the filler. A very wide range of oils and softeners can be used. In some cases where a baking paint is desired, drying agents may be used in the mixture.

The paint should probably be classed as a lacquer, since a solvent is used which does not remain as a part of the film. In general, the ordinary rubber solvents are used—such as gasoline, toluene, benzene, carbon tetrachloride, turpentine, kerosene, etc. The solvents are varied according to the use for which the paint is intended—i.e., brushing, spraying, or dipping.

AERO-X

Aero-X is a new low temperature accelerator which has been very favorably received in the rubber industry. Its outstanding characteristics briefly are: (1) effective cures at low temperatures, 20 to 30 pounds of steam, in a wide variety of compounds ranging from pure gum to all reclaim stock; (2) low cost per unit of acceleration; (3) safety and ease of handling in factory practice. Although primarily a low temperature accelerator Aero-X may be used at temperatures up to 75 pounds of steam, 320 degrees F.

It is compatable with all of the usual compounding ingredients except stearic acid or other acid softeners, and seems to be equally suitable for treads, carcass stocks, tubes, heels, soles, mechanicals, etc It is particularly free from scorching tendency.

Chemically it is a definite stable compound, and is easily tested for purity and uniformity. Physically it is a white, crystalline powder melting at about 100 degrees C. It has a slightly soapy feel, mixes well with rubber and is non-poisonous.

American Rubber Technologists

Canadian Group

GEORGE STAFFORD WHITBY, chem. *b.* 1887, Hull, England; grad. asso. Royal Coll. of Sci., London, 1906; first class honors B. Sc. in chem. U. of London, 1907; M. Sc. McGill U., Montreal, with Governor General's medal for research work; four years demonstrator at Imp. Coll. of Sci. and Tech., London, Eng.; chem. Société Financière des Caoutchouc, a large group of plantation companies in Malaya, Sumatra and Java, 1910-1917; asso. prof. and prof. of chem. McGill U., Montreal, since 1917. *Author:* "Plantation Rubber and the Testing of Rubber," 1920; extensive research on the full chemical examination of the non-caoutchouc constituents of rubber and latex; many papers on the treatment of latex and crude rubber, vulcanization, accelerators, etc. *Member:* Amer. Chem. Soc., Commission International de la Nomenclature de Chemie Organique, Sigma Xi. *Address:* McGill U., Montreal, Can.

Carl William Sweitzer, chem. *b.* Oct. 1899, Crediton, Ont., Can.; B. A., 1923; M. A., 1924; Ph. D., 1927, U. of Toronto, Can.; asst. in chem., U. Toronto, 1923-1924; holder of scholarships and fellowships of Nat. Research Council of Can., 1924-1927; industrial fellow, Columbian Carbon Co., Mellon Inst., Pittsburgh, Pa., 1928. *Author:* Various papers in *Trans. Roy. Soc. Can.* and *J. of Phys. Chem.* on "Light-Scattering of Aqueous Salt Solutions." *Member:* Am. Chem. Soc. *Address:* Mellon Institute, Pittsburgh, Pa.

Robert Derby Gartrell, chem. *b,* Jan. 27, 1895, Atlanta, Ga.; B. S. in chem. Georgia Tech., 1916; Milton Hershey Co., Ltd., Montreal, 1916-1917; research chem., 1917-1919; footwear tech. supt., 1919-1920; asst. genl. footwear factory mgr., since 1920, Dominion Rubber Co., Ltd., Montreal, Can. *Member:* Amer. Chem. Soc., Soc. Chem. Indus., England, Amer. Soc. Test Mats. *Address:* 749 Guy St., Montreal, Can.

Julian Campbell Howard, chem. *b.* May 28, 1891, Boston, Mass.; S. B., Harvard Coll., 1913; chem., 1913-1915; research chem., 1915-1920, B. F. Goodrich Co., Akron, O.; chf. chem., Kaufman Rubber Co., Kitchener, Ont., since 1920. *Author:* Patents on accelerators, solvent recovery machines, tire designs, abrasion testing machines, etc. *Member:* Am. Chem. Soc., Kitchener University Club, Kiwanis. *Address:* 226 Frederick St., Kitchener, Ont., Can.

J. Glen Gay, chem. *b.* May 25, 1902, Patrick, Scotland; B. Sc., U. of Glasgow, Scotland, 1923; demonstrator in chem., U. of Glasgow, 1923-1924; chem., Standard Chemical Co., Montreal, Can., 1924; asst. chem. 1925 and chf. chem. since 1926, Miner Rubber Co., Ltd., Granby, Que. *Member:* Early Twenties Club, Inst. of Chem. of Gt. Britain, Inst. of Rubber Indus., Can. Inst. of Chem. *Address:* Miner Rubber Co., Ltd., Granby, Que., Can.

Joseph William Crosby, chem. *b.* Nov. 17, 1896, Toronto, Can.; Toronto Tech. School, 1912; Gutta Percha & Rubber, Ltd., laboratory asst., 1913-1915 and 1919-1921; asst. supervisor and supervisor, planning dept., 1921-1927, supervisor, reclaiming dept., since 1924. *Address:* 409 Dovercourt Rd., Toronto, Can.

THE INDIA RUBBER WORLD'S brief biographies of American rubber technologists are approved by leaders of the rubber industry because the ambition, imagination and practical accomplishments of these men are largely responsible for America's leadership in the world's rubber manufacturing industry. Technical superintendents, chemists, process and development engineers in rubber manufacturing and reclaiming plants, research, testing, and service laboratories are invited to send their biographical data to us for publication.

Francis Ernest Lloyd, botanist, *b.* Oct. 4, 1868, Manchester, Eng.; 1887-89, Lafayette Coll., A. B., 1891, A. M., 1895, Princeton U., U. of Munich, 1898; U. of Bonn, 1901; staff member, Desert Laboratory, Carnegie Inst., 1906; cytologist, Ariz. Expt. Sta., 1907; director, Dept. of Investigation, Continental-Mexican Rubber Co., 1907-08; consulting botanist, United States Rubber Co., since 1908; prof. botany, Ala. Polytechnic Inst., 1908-1912; Macdonald prof. botany, McGill U., Montreal, Que., since 1912. *Author and Researches:* Embryology, anatomy and morphology; transpiration and physiology of stomata, rubber culture; botanical pedagogies, general physiology; fluorescent pigments; reproduction in Spirogyra including fundamental studies of Spirogyra; rubber culture including fundamental studies of guayule; vampyrella. *Member:* Fellow Royal Soc. of Can., Fellow Linnean Soc., London, Eng., life mem. Amer. Soc. Plant Physiologists; hon. mem. Phila. Coll. Pharmacy; Pen and Pencil Club, Mason, etc. *Address:* Biological Bldg., McGill University, Montreal, Que.

Donald Edmund Beynon, chem. *b.* 1884, Bampton, Ont., Can.; B. A. Sc., U. of Toronto, Ont., 1906; asst. chem., Canadian Consolidated Rubber Co., 1907; chem., Canadian Paper Co., 1906; supt., Continental Rubber Co., 1908, Torreon, Mexico; chem., Derby Reclaiming Co., Derby, Conn., 1906; fact. mgr., Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., since 1910. *Member:* Soc. of Chem. Indus., Am. Chem. Soc., Asso. of Professional Engrs. of Canada, Canadian Chem. Asso., U. of Toronto Alumni Asso., Masons. *Address:* 47 Playter Crescent, Toronto, Can.

David J. Huether, chem. *b.* 1884, Ontario, Can.; B. A. Sc., U. of Toronto, 1909; chem., Continental Rubber Co., 1909; chem., Century Rubber Co., Plainfield, N. J., 1910-1911; U. of Toronto, 1912; chem., Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Can., since 1913. *Research:* oxygen determinations, deresination of rubber, improvement of guayule. *Member:* Soc. of Chem. Indus. (England) Registered Professional Engineer, Ontario, Mason, Shriner. *Address:* 55 Jackman Ave., Toronto, Ont., Can.

Gerald Arthur Suckling, mech. engr., *b.* 1891, Montreal, Que., Can.; B. Sc., McGill U., Montreal, Que., 1914; asst. supt. and supt., Cordite Dept., Beloeil, Que. and T. N. T. Dept., Nobel, Ont.; Canadian Explosives Co., 1914-1919; tech. asst. tire division, Dunlop Tire & Rubber Goods Co., Toronto, since 1919. *Member:* Delta Upsilon. *Address:* 9 McMaster Ave., Toronto, Can.

Oscar J. Fleischhauer, asst. supt. *b.* Jan. 3, 1883, Wellesley, Ont., Can.; public school graduate, 1908; rubber shoe and tire operative, 1900-1912; foreman, tire and vulcanizing depts., 1912-1920; asst. supt., since 1920, Dominion Rubber Co., Ltd., Kitchener, Ont. *Address:* 27 Wellington St., Kitchener, Ont., Can.

William Arthur Greunawald, supt., *b.* Mar. 29, 1881, Winesburg, Holmes Co., O.; public and high school graduate; tire maker, B. F. Goodrich Co., Akron, O., 1900-1906; inspector and asst. foreman, U. S. Rubber Co., Detroit, Mich., 1906-1911; in charge of tire repair dept., Detroit Police Dept., 1911-1913; general foreman and supt., Dominion Rubber Co., Ltd., Kitchener, Ont. *Member:* Mason., Ill. Commercial Men's Asso., Ontario Motor League. *Address:* 36 Heins Ave., Kitchener, Ont., Can.

Walter Uffelman, chem. *b.* April 9, 1893, Waterloo, Ontario, Can.; Batchelor of Music, U. of Bishops Coll., Lennoxville, Ont., 1924; fellow of Canadian Coll. of Organists, 1922; chem., Penman Littlehole Chem. Co., Syracuse, N. Y., 1915; with Dominion Rubber Co., Ltd., Montreal, Que., since 1915; now tech. supt., Papineau factories, Montreal. *Member:* A. S. T. M., A. C. S. associate member S. C. I., England. *Address:* Montreal, Que., Can.

New Machines and Appliances

Unit Air Conditioner

The pictures herewith represent the outside appearance and internal arrangement of a unit air conditioner which extends unquestioned advantages to many and varied industries. It is of particular interest in rubber plant laboratories where careful control testing and research work are conducted on either fabrics or rubber.

The unit is contained within a neat enameled cabinet, 7 feet 8 inches high, with a floor area only half that of an ordinary desk. The apparatus within comprises a series of revolutionary developments for handling and conditioning air which together perform efficiently every function of a complete central station system. Specifically the purpose of the apparatus is to wash the air, reduce or increase and control its humidity according to requirements, and to circulate the air uniformly through the room to be conditioned.

The unit has a capacity to deliver 2,500 cubic feet of conditioned air per minute. A single 1 h. p., totally enclosed, marine motor performs this entire work. The sectional view indicates the course of the air through the unit. It enters above a constant

EXTERIOR INTERIOR

Carrier Unit Air Conditioner

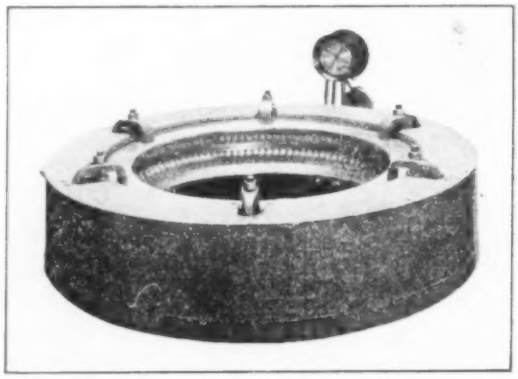
level water supply reservoir into a spray filled chamber. Thence by a motor operated fan it ascends through a specially designed radiator and is discharged above into the room being controlled.—Carrier Engineering Corp., 750 Frelinghuysen Ave., Newark, N. J.

Tire Retreading Machine

The retreading machine here pictured is unique in the fact that it vulcanizes a tread upon a tire in a single operation under air pressure and at the same time has sufficient adjustability to accommodate the variability in sizes between the different makes of tires.

The vulcanizer is built in full circle and applies pressure and heat to the tread only of the tire and provides for readily placing and removing it. To change from one size to another it is simply necessary to change matrices to correspond to the new size. All curing surfaces are heated by live steam generated by an automatic heating unit, which responds to variation in the steam pressure and maintains it uniform.

The preferred method of using the retreader is to mount the tire on a rim with a special compounded curing tube in it. This tube can be supplied by the tire companies. Standard road rims are used. The average life of the tubes is from 100 to 200 cures. The average cure requires about an hour, depending largely on the kind



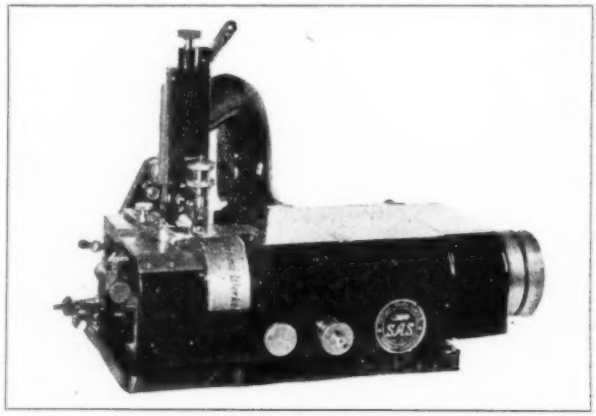
Heintz Full Circle Retreader

of repair stock used. At the end of the cure the sidewall clamps and mold clamps are removed and the upper section of the matrix is lifted out and the tire removed. Another tire of the same size can be immediately retreaded, or if a matrix change is necessary to handle another tire size, it requires less than three minutes to change matrices.—James C. Heintz & Co., 3738 West 143d St., Cleveland, O.

A Special Skiver

In the preparation of bevel edged strips and various small parts, etc., a skiving machine of the type here pictured is indispensable. The manufacturer of reliners, boots and patches, footwear, and novelties is in fact, seriously handicapped without it.

The special model shown is the latest embodiment of the building experience of 25 years during which time many thousand machines of this type have been produced. The design and operat-

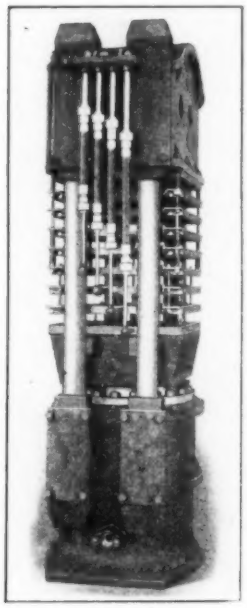


S. A. S. Skiver for Rubber Work

ing efficiency of the present model give it distinct advantages over the former ones. Special knives are available for rubber work. The machine itself is rugged and durable and occupies but a small amount of bench space.—Manufacturers' Supplies Co., 716-32 North 18th St., St. Louis, Mo.

Sole and Heel Press Vulcanizer

Wear resistance of rubber shoe soling is enhanced by proper cure under heavy pressure such as can be secured by the press here pictured.



Farrel-Birmingham Sole Press

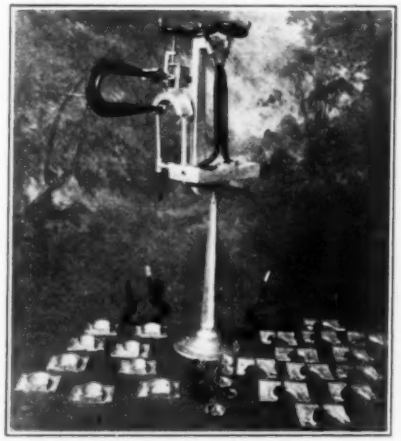
This eight opening press has platens 30 by 30 inches. It was designed for curing soles under the extremely high pressure of 1,000 pounds per square inch, or a total of 450 tons with 2,000 pounds initial water pressure on the 24-inch diameter ram. The box section top girder is made so that the maximum deflection under the severest load is less than three one-thousandths of an inch, assuring great accuracy in the product. The column heads are designed so that all the pressure comes on the girder; there is none whatever on the caps.

The platens are rolled steel and drilled for steam circulation to provide maximum and uniform heating. The steam piping is so arranged that there is absolutely no water trap anywhere in the system between the intake and exhaust manifolds.

The exceptional results obtained on this vulcanizer are attributed chiefly to the large factors of safety used in designing the press. This is particularly true of the construction of the head block to hold the deflection of the structure at a minimum.—Farrel-Birmingham, Inc., Derby, Conn.

Rubber Footwear Vulcanizer

There seems to be no good reason why vulcanizing repair shops for tires and tubes should not extend their activities to vulcanizing patches on rubber boots and shoes. A simple device for this purpose is here pictured.



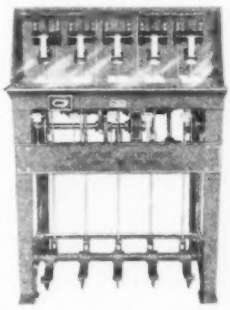
Julian Model No. 2 Shoe Vulcanizer

It is one of several models, by which a repair can be made on any part of a boot or shoe in five minutes. One sole and one heel can be applied by it at the same time. Patches are applied to the boots by screw clamps set to place by hand wheels. Numerous aluminum mold plates serve as interchangeable equipment for the full range of sizes of boots and shoes.

In detail the model pictured consists of a combination flat and curved sole and heel plate tapped for ¾ inch pipe at three places. Size of plate, 15½ by 3 by 8 inches. Has double assembly clamp holder with two pressure screws for sole and heel at one operation. Has one ribbed stand post and flat base to hold the machine upright while in operation. Twenty-six adjustable curved aluminum sole plates and nine solid aluminum heel plates are included with each machine; also two pressure bars and all sizes of inside sole and heel lasts for inside pressure.—E. C. Julian Rubber & Mfg. Co., Elwood, Ind.

Flexing Test Machine

The flexing testing machine pictured and briefly described below was put into use and its great value made known to the rubber trade through the efforts of Committee D-11 of the American Society for Testing Materials.



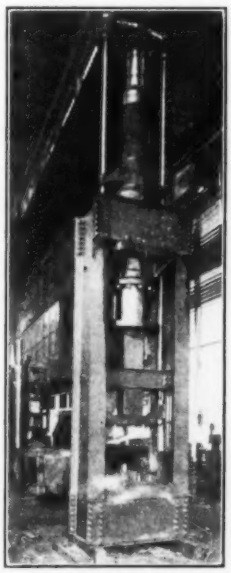
Scott Flexing Machine

The machine measures about 50 inches high, and occupies a floor space of about 26 by 38 inches. It is driven by ¼-h.p., 1,750 r.p.m. motor attached to its frame. Connection between the driving motor and the rocker arm of the flexer proper is by a chain of four gears.

There are five flexing heads for testing that number of belting samples at the same time in full view enclosed back of a glass front. The test sample is in the form of a strip 1 by 8½ inches. It is bent around a 1¼-inch hub and has an arc of contact of 135.5 degrees. The ends of the sample are gripped by clamps and the action is one of flexing back and forth around the hub. The full cycle of travel, 5¼ inches, is made at the rate of 170 per minute. An average high grade belt endures the test about four hours. The machine is durably made and weighs 1,015 pounds.—Henry L. Scott Co., Providence, R. I.

Battery Jar Press

The battery jar molding press illustrated here is a structural frame machine which gives great strength and at comparatively low first cost. The press is of the moving down type in which the main ram returns to its upper or starting position by means of the pullback cylinder with the two side rods seen at the top of the press.



Southwark Press

In operation the bottom mold for the case or battery box is fastened to the lower table of the press. The plunger or die which has projections on it of the proper shape to form the various cells or compartments in the battery box is attached to the ram. The bottom mold is filled with the composition which is used to form the battery jar and the ram with its die is brought down into it, thus forming the battery box.

The ram is operated by a four-way valve and as soon as the molding is completed the water is exhausted from the main cylinder and pressure is admitted to the pullback cylinder which raises the ram. The latter moves upward carrying the molded box with it. The box is then stripped from the die by a spring arrangement which strikes the channel irons seen at about the center of the frame in the illustration. A small stripper ram, operated by an independent valve, is located in the bottom table of the press. This is for use in stripping the battery box from the mold.—Southwark Foundry & Machine Co., Philadelphia, Pa.

Tube Repair Vulcanizer

The illustration pictures a compact electric vulcanizer of latest design, and consisting of a pressure clamp, a curing plate and 12 quick cure patches. It is packed in an attractively lithographed can with buffer top which is no longer than a standard tube repair kit. It operates quickly and with certainty and enables the motorist to apply a perfectly vulcanized patch in eight minutes.

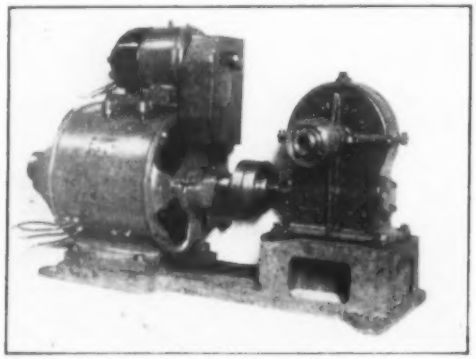
Goodyear Electric Vulcanizer

The current necessary is supplied from tail light, dash, headlight or any single base light socket of the car. The fact that no matches are used makes for absolute safety and when the patch is applied it is permanent-lasting for the life of the tube.

After buffing the tube, the patch is applied, the heating device is placed upon it and clamped without the use of pliers. The electric connection is plugged in at a light socket and produces a perfectly formed vulcanized patch as an integral part of the tube.—The Goodyear Tire & Rubber Co., Akron, O.

Variable Speed Reduction Unit

There is frequent need in a rubber mill for closely regulating the speed with which soft, warm stock is conveyed away from its point of production. For example, tubing machine products are liable to serious distortion of size or gage by stretching or crowding up.



De Mattia Reduction Unit

The illustration pictures an electrically operated speed reduction unit of one hp., the special feature of which is that it provides with accuracy any desired speed range of 10 to 1. The slow speed of the driving shaft is 4 r.p.m. and the high speed 40 r.p.m. The speed can be varied any fraction of a revolution between the highest and lowest speeds by push button control, located at any desired point in the factory, relative to the reduction unit.

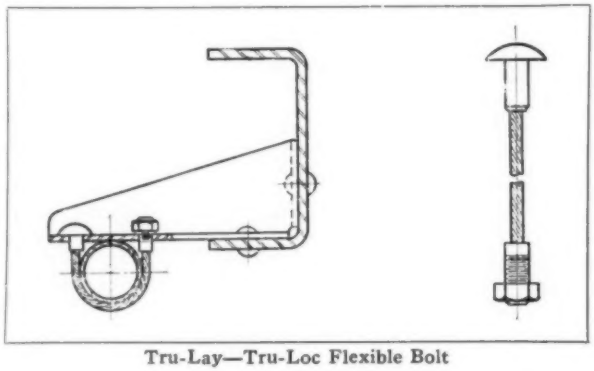
In the illustration, the motor is seen connected to a worm reduction unit by means of a Francke flexible coupling, both being mounted upon a common bed plate. This combination is suitable for operating a conveyer 150 feet long for taking away rubber tubing from a tubing machine. For such a purpose, delicate control is essential, as the surface speed must be exactly right for the stock being run in order not to stretch or crowd the gage of the tubing.

It is advantageous to locate the reduction unit at the farther end of the conveyer with the push button control near the head end for the convenience of the operator.—De Mattia Brothers, Inc., Clifton, N. J.

Flexible Bolt for Mill Use

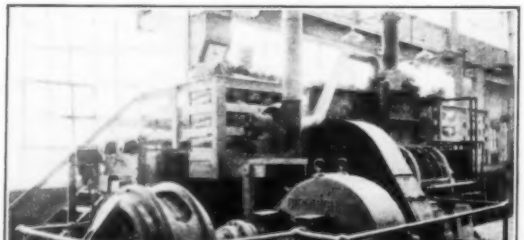
There are countless places around every factory where rigid U bolts are impracticable. Flexible bolts of the style here pictured are finding ready acceptance as auxiliary hangers for power shafts; suspension brackets for overhead steam or water piping; as shackle bolts for temporary wall boxes, tanks, etc.; for scaffolding and tackle and in other places where semi-flexible connections are necessary.

The new bolt comprises wires preformed to the exact helical shape they must assume as a rope. The result is it does not require seizing but may be cut like a rod.



Tru-Lay—Tru-Loc Flexible Bolt

This type of rope permits a close-fitting attachment to be slipped over the unseized end of the rope and to be processed so that the steel of the fitting cold flows into the interstices of the rope and thus becomes practically integral with it. Naturally such fittings can be threaded for a nut or capped for a head. The flexible bolt thus developed is available in varying lengths and holds promise for universal acceptance.—American Cable Co., 215 N. Michigan Ave., Chicago, Ill.



GENERAL ELECTRIC SYNCHRONOUS MOTOR DRIVING A NO. 9 BANBURY MIXER IN THE PLANT OF THE BOSTON WOVEN HOSE & RUBBER CO., CAMBRIDGE, MASS.

Annual Meetings N. A. W. M. D.

The Fifteenth Annual Meeting of the National Association of Waste Material Dealers, occurred March 21, at the Hotel Astor, New York, N. Y. It was a well represented gathering of members from all parts of the United States and several foreign countries. Important matters relating to the waste industry as a whole, were discussed and the satisfactory progress of the association was made evident to all members present.

The following officers and directors were elected for the ensuing year: Henry Lissberger, president; Carlton B. Overton, first vice president; George Birkenstein, second vice president; R. W. Phillips, third vice president; Charles M. Haskins, secretary-treasurer. Directors for two years: Louis Birkenstein, S. Birkenstein & Sons, Inc., Chicago, Ill.; James Rosenberg, New York N. Y.; Ivan Reitler, Federated Metals Corp., New York, N. Y.; R. W. Phillips, E. I. duPont deNemours & Co., Wilmington, Del.; John Murphy, Daniel I. Murphy, Inc., Philadelphia, Pa.; J. M. Maher, Pennsylvania Wood & Iron Co., Buffalo, N. Y.; G. H. Bangs, Western Electric Co., New York, N. Y.; Benjamin Friedman, Metals Refining Co., Hammond, Ind.; G. B. Doane, Perry, Buxton Doane Co., Boston, Mass.; H. H. Cummings, W. H. Cummings & Sons, New York, N. Y.; Albert T. Hicks, Daniel M. Hicks, Inc., New York, N. Y.; Herman Muehlstein, H. Muehlstein & Co., New York, N. Y.; Robert Johnston, Jr. General Paper Stock Co., St. Louis, Mo.; S. C. Weber, S. C. Weber Iron & Steel Co., Chattanooga, Tenn.; N. C. Myers, Myers-Lipman Wool Stock Co., New York, N. Y.; G. H. Rady, E. J. Keller Co., New York, N. Y.; W. J. Ross, Hyman Michaels Co., Chicago, Ill. Philip Senegram, Philip Senegram Co., Los Angeles, Calif., was elected a director to fill the unexpired term of A. Glant.

The annual meeting of the Scrap Rubber Division was held at the Hotel Astor, New York, March 20. The suggested changes in classification of certain scrap rubber grades taken up in committees with the Rubber Reclaimers Division of the R. A., were accepted by the dealers with a vote of thanks to the reclaimers. David Feinberg of Boston was reelected chairman of the division.

The Anniversary Banquet was held in the Grand Ballroom of the Hotel Astor, New York, March 21, and celebrated the fifteenth year of the association's steady progress, there now being represented in the organization seventeen countries, fifteen of which are either in Europe or the Orient. G. H. Rady, retiring president, was toastmaster and introduced the talent and conducted the program in his usual happy manner. Hon. Walter F. George, U. S. Senator, and Sir Charles Bartholomew were speakers of the evening.

RUBBER ASSOCIATION OF CANADA

The eighth annual meeting and dinner of the Rubber Association of Canada were held last month at the Windsor Hotel, Montreal, Canada. New officers and directors are as follows:

President, E. W. BeSaw, Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont.; vice president, C. H. Carlisle, Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.; treasurer, C. N. Candee, Gutta Percha & Rubber, Ltd., Toronto; manager and secretary, A. B. Hannay, Toronto; assistant treasurer, C. A. Jones, Seiberling Rubber Co. of Canada, Ltd.

Directors: E. W. BeSaw, Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont.; C. H. Carlisle, Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.; J. H. Coffey, Jr., Gutta Percha & Rubber, Ltd., Toronto; W. A. Eden, Dominion Rubber Co., Ltd., Montreal; F. L. Freudeman, Sterling Rubber Co., Ltd., Guelph, Ont.; H. C. Jefferies, Canadian I. T. S. Rubber Co., Ltd., Toronto; W. H. Miner, Miner Rubber Co., Ltd., Granby, Que.

Directors ex-officio (past presidents): J. B Hathaway, Northern Electric Co., Ltd., Montreal; John Westren, Dunlop Tire & Rubber Goods Co., Ltd., Toronto.

John Westren the retiring president, was toastmaster at the dinner and introduced the speaker of the evening, Hon. James Malcolm, minister of trade and commerce of Canada.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

Number	Inquiry
1073	Manufacturers of Heptaldehyde.
1074	Source of supply for rubber impregnated cord fabric.
1075	Source of supply for almeidina gum.
1076	Reclaimed tire beads.
1077	Manufacturers of rubber molds.
1078	Makers of rubber thread.
1079	Apparatus for use in recovery of gasoline and benzol from rubber sheet processes and from brake lining treatment.
1080	Manufacturers of suction cups.
1081	Manufacturer of Rubberite.
1082	Printing press for blowout patches.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country	Purchase or Agency
29,652	Industrial rubber goods...	Brno, Czechoslovakia.	Agency
29,659	Rubber belting	Lahore, India	Agency
29,703	Druggists' sundries, toys and scrap rubber.....	Milan, Italy	Both
29,705	Hip and knee boots.....	Borieaux, France ..	Both
29,706	Artics	Zurich, Switzerland.	Agency
29,714	Rope, 260 thread, rubber..	Prague, Czechoslovakia	Agency
29,721	Rubber goods.....	Bombay, India	Agency
29,760	Rubber goods especially tires	Warsaw, Poland	Agency
29,774	Medical and dental rubber apparatus	Berlin, Germany ...	Agency
29,788	Rubber aprons	Marseille, France ..	Both
29,789	Tires	Hilversum, Netherlands	Purchase
29,790	Sanitary rubber goods, tire repair material, gloves, and mats	Cairo, Egypt.....	Agency
29,791	Tires	Hamburg, Germany..	Agency
29,792	Tires and novelty goods...	London, England....	Agency
29,793	Rubber shoes	Oslo, Norway.....	Agency
29,797	Bicycle tires	Durango, Mexico....	Both
29,802	Druggists' sundries	Prague, Czechoslovakia	Agency
29,806	Aprons and rubber cloth..	Chemnitz, Germany..	Agency
29,843	Druggists' sundries.....	Vienna, Austria.....	Agency
29,847	Druggists' sundries.....	Vienna, Austria.....	Agency
29,871	Balata belting	Sao Paulo, Brazil...	Both
29,918	Rubber shoes	Hamburg, Germany..	Purchase
29,936	Cheap rubber toys.....	Beirut, Syria.....	Both
29,945	Automobile floor mats....	Cairo, Egypt.....	Agency
29,951	Druggists' sundries	Cairo, Egypt.....	Purchase
29,961	Rubber belts and tubing..	Dresden, Germany..	Purchase
29,962	Bathing caps and slippers	Hamburg, Germany..	Purchase
30,003	Heels	Ahmedabad, India....	Purchase
30,029	Rope, rubber, 260 thread..	Prague, Czechoslovakia	Purchase
30,030	Tires	Prague, Czechoslovakia	Agency
30,031	Garden hose	Magdeburg, Germany	Either
30,035	Tires and tubes.....	Beirut, Syria.....	Agency
30,049	Rubber packings	Riga, Latvia.....	Agency
30,059	Rubber goods	Birmingham, England	Both
30,092	Tires	Berlin, Germany....	Either
30,093	Rubber belting	Hamburg, Germany..	Both
30,108	Knee rubber boots.....	Oporto, Portugal....	Agency
30,143	Druggists' sundries	Alexandria, Egypt...	Agency
30,222	Boots	Cardiff, Wales.....	Both

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Number	Special Circulars
1841....	Rubber Sundries and Specialties.
1854....	Japanese Tire Market.
1855....	Rubber Footwear Exports.
1857....	Austrian Imports 1925 and 1926.
1863....	Tire Exports from United States, Canada, United Kingdom and France, 1927.
1870....	Mechanical Rubber Goods Exports.
1885....	Tire Exports.

New Goods and Specialties

Cleaning Mitten

Ze Mitt Twin

The Ze Mitt Twin mitten may be used for polishing and dusting furniture, floors, woodwork, stoves, automobiles, silverware, shoes, etc. It is reversible; one side for application of liquid, the other side for polishing, with a protective interlining of rubber. The entire operation cannot soil the hands or injure the finger nails.—French Chemical Co., Wrigley Bldg., Chicago, Ill.

Sponge Rubber Ball

With colors designed to attract and hold the eye of children, both girls and boys, the sponge rubber ball illustrated has been an instantaneous hit. The ball will last a whole season and has bounce enough to satisfy the most fractious little customer. —The Sponge Rubber Products Co., Derby, Conn.

Mottled Ball

Protection for Radiator

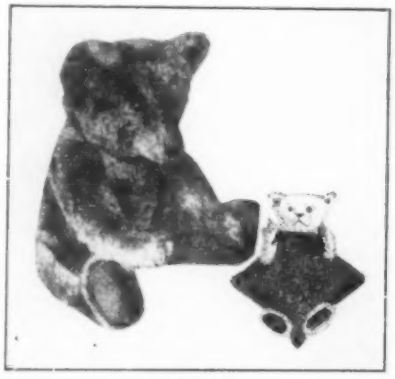
Temperite

The Temperite is a practical radiator shutter recently marketed which will keep the automobile engine at the proper operating temperature during the cold months.

The cover consists of a heavy wire frame attached to the radiator. The curtain, made of duPont Pontop, is fastened to the frame and can be lowered or raised to any height and secured there by thumb screws at the top of the curtain on each side. The device is manufactured by the Mardo Leather Goods Co., Inc., 105 Wooster St., New York, N. Y.

Live Teddy Bear

The breath of life has been blown into the Teddy Bear, and his body inflated with air, is as soft, elastic and supple as the body of a live animal. He has also been endowed with a voice, and pressure applied to any part produces a realistic growl. The "Snuky-Bär" is provided with a self-closing valve which prevents any escape of air, and strong rubber is used for the inner part of the body.



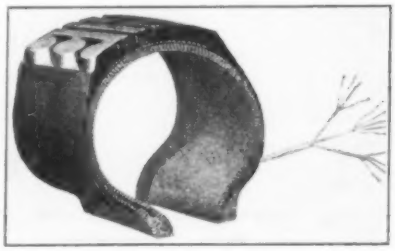
Snuky

An interesting development of the live teddy bear, by the same manufacturer, is in the form of a cushion, some of which are fitted with harmonized voices and tones. —Maja G.m.b.H., Leipzig N22/Blumenstr. 46, Germany.

Gas Mask

The mask illustrated is a single unit scientifically designed giving the exceedingly light weight of one pound and twelve ounces complete with cartridge inserted for use. The cartridge is a round tin can holding filtration chemicals and smoke filtering pads. The ends of the can are of perforated metal to allow incoming air to pass through filter pads and chemical filters to the face piece in a purified state to be breathed. The face piece is of seamless molded rubber with eyepiece glass holders and side valve holders molded into the single unit. A molded rubber head harness, double capacity side outlet valves and removable cartridge cannister are other exclusive features. — The Schavoir Rubber Co., Stamford, Conn.

The Schavoir Mask



Silvertown Construction

Bouncing Toy

Sponge Rubber Egg

An amusing novelty, the sponge rubber bouncing egg is a sport for young and old, and may even be given to the dog for play and exercise. Because of its shape, it bounces in a different direction each time and causes endless amusement trying to place and catch it. It is a harmless toy for the infant, indestructible and easy to wash.—Rogers Bros., 6, Fox Court, Holborn, London, E. C. 1.

New Cord Fabric

The Silvertown tires are made of a weftless cord fabric which gives more uniform elasticity, absolute uniformity of the rubber coating around each cord and eliminates the sawing action caused by cross threads. The illustration shows the construction of the tire which provides a tensile strength of 17.5 pounds.—The B. F. Goodrich Rubber Co., Akron, O.

New Size Balloon Tire

All-Weather Tread

The new size balloon tire—30 by 4.50—made by the Goodyear Tire & Rubber Co., Akron, O., has been accepted as standard original equipment for the new model Chevrolet, it is announced. The new tire when on the rim is approximately 4.75 inches in cross sectional area, which is considerably larger than the tire used on the old models. It is easy to mount on either the new Ford or Chevrolet, the former of which is equipped with a 21-inch drop center rim, while the latter retains the 21-inch flat base rim. The tire can also be used on the old models which are equipped with 29 by 4.40 size tires.

Basketball Shoe

A basketball shoe built for speed is fashioned with plantation rubber outsoles

Rubber Soled Shoe

and leather insoles. The uppers are of chrome elk with padded tongues. Protected elk covered edges on soles and a system of ventilation add to the comfort and wear of the shoes.—Getty & Scott, Ltd., Galt, Canada.

Athletic Ball Gage

A new gage for testing pressure in inflated athletic balls has just been placed on the market by A. Schrader's Son, Inc., 470 Vanderbilt Ave., Brooklyn, N. Y. Because of its unique construction, it is possible to determine the true pressure within the ball rather than the impact pressure of the pump. During the process of inflation, the air passes directly from the pump hose through the foot of the gage and thence into the ball. To test the pressure, one simply presses downward on the gage, this pressure opening a check valve which allows the free passage of air from the ball into the air chamber of the gage, pushing out the indicator. The distance the indicator is moved measures the pressure within the ball.

Colorubber Hookup Wire

This is very effective and convenient for ground wire. Colorubber is also suitable for hooking up batteries and is ideal for wiring sets.—Belden Mfg. Co., Twenty-third St. and Western Ave., Chicago, Ill.

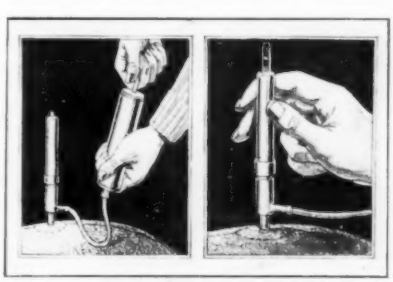
Sanitary Rubber Toy

The Dorco sanitary rubber toys are manufactured by Dr. Dorogi & Co., Gummifabrik A.-G., Budapest - Alberrfalva, Hungary. Artistically colored, the designs are carried out in a most realistic manner. The illustration shows an Indian astride a horse, the reins loosely held in the hands, and feathers flying in great style.

Dorco Inflated Toy

Safety Swimming Belt

An improved safety swimming belt which is neither cumbersome nor uncomfortable and may be worn under the bathing suit has recently been invented by Simon R. Brygider Co., 82 East 10th St., New York, N. Y. It fits snugly around the waist and is prevented from slipping by ingeniously devised shoulder and thigh straps. The garment is made of rubberized waterproof material cemented to make it air tight. Air is let in by means of a rubber tube attached to the upper center, a valve preventing the air from escaping. The belt will sustain a dead weight of from 150 to 200 pounds and will remain inflated from five to ten hours, depending upon atmospheric conditions. The device



Pressure Gage

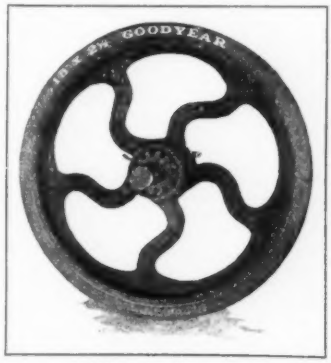
Belt Used as a Life Preserver

may also be used as a life preserver.

Patents for the belt are pending in the United States and in foreign countries.

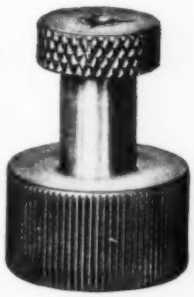
Wheelbarrow Tire

Friction and jolts are reduced to a minimum on the new wheelbarrow wheel designed by the National Malleable Steel & Casting Co. of Cleveland, on which tires are directly vulcanized. The wheel, with tire, roller bearings and fittings weighs only twenty-seven pounds. The tire is two and a half inches wide.—The Goodyear Tire & Rubber Co., Inc., Akron, O.



Wheel with Tire

New Hose Nozzle



Giant, Jr.

The manufacturer claims that the Giant Junior nozzle, which stands only 1½ inches high, does the same work as the largest nozzle, and for certain uses, such as cleaning an automobile, does the work better. One hand control is used and a simple turn changes the flow from a powerful full stream to a coarse or fine spray, or to the merest trickle.—The Clark Mfg. Co., 427 North 13th St., Philadelphia, Pa.

Editor's Book Table

New Trade Publications

"Oxynone—Accelerator and Anti-Oxidant." This introductory booklet of 43 pages issued by The Rubber Service Laboratories Co., Akron, O., serves admirably to inform the rubber compounder as to the nature and properties of oxynone and its effects in the dual capacity of accelerator and anti-oxidant. Over two dozen tabulations of physical tests show the effect of oxynone alone or in conjunction with other active ingredients and permit making many interesting comparisons. The figures indicate how the new material may best be utilized and will facilitate the task of the factory chemist in his study of oxynone.

"Tuads," a series of seven data sheets and one of text, issued by R. T. Vanderbilt Co., 50 East 42nd St., New York, N. Y., the purpose of which is to show how tuads accelerator may be used with litharge to eliminate or retard scorching and air curing.

The Roessler & Hasslacher Chemical Co., 709 Sixth Ave., New York, N. Y., has brought out an attractive book entitled "Advertising Which Keeps Attention on R & H Chemicals and Service." Sample pages of the class of advertising carried in various publications are given.

"Paper Mill Rolls a Manual of Information for Paper Makers" issued by The B. F. Goodrich Rubber Co., Akron, O., is a 32-page booklet in which the application of paper mill roll covers is discussed in detail and their use fully illustrated in many types of paper making machines. The importance of the density of rubber covered rolls and how it is determined is discussed, also the operations of press roll grinding and crowning. The advantages of the Vulcalock process for attaching roll covers to iron centers are shown. Recommended grades are charted for the rolls used in making different types of paper on Fourdrinier and cylinder machines.

"The Carrier Unit Air Conditioner," a 16-page booklet issued by the Carrier Engineering Corp., Newark, N. J., is a very interesting treatise on a portable air conditioning unit which vastly extends the possible applications among small manufacturers and individual departments of large plants, such as the testing and research laboratories in the rubber and textile trades.

"Profitable Application of Electric Industrial Trucks." An illustrated and indexed treatise of 89 pages edited by H. J. Payne and published by The Society for Electrical Development, Inc., 420 Lexington Ave., New York, N. Y. The chapter on the use of electrical trucking equipment is typical of its general industrial use. The book is a valuable addition to any plant library.

The Miner Rubber Co., Ltd., Granby, Quebec, Canada, has published a calendar catalog for 1928 which is very cleverly developed. A pocket at the bottom of the calendar holds the catalog and order blanks are provided at the end of both calendar and catalog.

Handbook to British Malaya 1927 contains 191 pages of interesting information on the history, administration, commerce, communications, climate, health, industries, etc., of the country. It is profusely illustrated and has an index and map. The book has been compiled and edited by R. L. German and is published annually. Copies may be obtained from The Malay States Information Agency, Malaya House, 57, Charing Cross, S. W. 1, London, England.

"Tensile Properties of Soft Rubber Compounds at Temperatures from —70 to +147 degrees C." Technologic Paper No. 364, Bureau of Standards, Washington, D. C. The authors, R. F. Tener, S. S. Kingsbury and W. L. Holt show that changes in rubber compounds due to temperature should be considered in the design of rubber articles.

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Chemical Utilization of Rubbers Vulcanized with Polynitro Compounds and Benzolyl Peroxide, and its Possible Bearing on Vulcanization.—H. L. Fisher and A. G. Gray, *Indus. & Engr. Chem.*, Mar., 1928, pp. 294-295.

Aging of Stretched Rubber.—A. Kelly, B. S. Taylor and W. N. Jones.—*Indus. & Engr. Chem.*, Mar., 1928, pp. 296-298. Graphs.

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Effects of Ozone on Stretched Rubber.—F. H. Haushalter, W. N. Jones, and J. W. Schade, *Indus. & Engr. Chem.*, Mar. 1928, pp. 300-302. Graphs.

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Reducing Vulcanization Period of Dipped Goods in Sulphur Chloride Vapor.—R. Ditmar and G. Balog, *Gummi-Zeit*, 1928, 42, pp. 858-859.

Absorption of Rubber and of Gutta Percha in the Ultra-Violet Spectral Region.—G. Scheibe and R. Pummerer, *Ber.* 60, pp. 2163-7 (1927).

Cryoscopic Molecular Weight Determinations of Rubber.—R. Pummerer, H. Nielsen and W. Gündel. *Ber.* 60, pp. 2167-75 (1927).

Variation in Plantation Rubber.—B. J. Eaton and R. O. Bishop.—*Malayan Agri. J.*, 15, pp. 283-9 (1927).

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Tire Fabrics from the Rubber Manufacturers' Point of View.—A. M. Munro, *Textile J. of Australia*, 2, pp. 263-5, 319-20, 375-7 (1927).

Dark Green Metallic Spots on Colored Chrome Leather Women's Shoes, Caused by Transparent Rubbers Vulcanized with Sulphur Chloride.—R. Ditmar, *Gummi-Zeit*, 42, p. 533 (1927).

Safety Code for Rubber Mills and Calenders.—J. E. Congdon, U. S. Bur. Labor Statistics, Bull. 447, 11 pp. (1927).

New Röntgenographic Investigations of Rubber and Related Substances.—E. A. Hauser, *Kaut.*, 1927, pp. 228-30.

Lamp Black in the Rubber Industry.—F. Grove-Palmer, *Rubber Age* (London), Mar., 1928, p. 25.

Moisture in Carbon Black.—C. R. Johnson, *Rubber Age* (N. Y.), Feb. 25, 1928, pp. 535-6.

Coagulation of Latex.—P. Bary, *Rev. Gen. Caout.*, Feb., 1928, pp. 3-5. Illustrated.

Absorption and Diffusion of Gas Through Rubberized Balloon Fabric.—A. Dubosc, *Rev. Gen. Caout.*, Feb., 1928, pp. 7-8.

Modern Aspects of Rubber Cultivation.—C. H. Wright, *I. R. Jour.*, Feb. 11, 1928, pp. 213-219; Feb. 18, pp. 251-255; Feb. 25, pp. 290-293.; Mar. 3, pp. 325-27, 330-333. Illustrated.

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THE THEORY OF THE NEEDLE-SHAPED RUBBER MOLECULE IN SCIENCE AND PRACTICE.—E. Lindmayer, *Gummi-Zeit.*, Feb. 10, 1928, pp. 1,025-1,028. Diagrams.

THE USE OF ACID-PROOF CONSTRUCTION MATERIALS IN THE RUBBER INDUSTRY.—*Gummi-Zeit.*, Feb. 10, 1928, pp. 1,031-1,034, and *Gummi-Zeit.*, Feb. 17, 1928, pp. 1,079-1,080. Illustrated.

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EXPERIMENTAL TAPPING OF HEVEA BUDDINGS AND SEEDLINGS ON THE BOEKIT MARADJA ESTATE.—H. J. V. S. Holder and C. Heusser, *Archief.*, Jan., 1928, pp. 25-36. English version, 37-49. Tables, charts.

EXPERIMENTAL TAPPINGS OF HEVEA BUDDINGS.—C. Heusser, *Archief.*, Jan., 1928, pp. 50-58. English version, 59-60. Tables.

THE KEEPING QUALITIES OF "RECOVERED" RUBBER.—A. D. Luttringer, *Le Caout.*, Feb. 15, 1928, pp. 13,886-13,887.

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ON ELECTROLYTE PRECIPITATION OF FRESH AND PRESERVED LATICES AND THE ROLE OF ALBUMEN IN COAGULATION.—P. Scholz, *Kaut.*, Jan., 1928, pp. 5-8. Tables.

ON RACKING AND RACKING-TENSIONS OF UNBROKEN RUBBER. A Contribution to Knowledge of Thermo-elasticity of Racking.—H. Feuchter, *Kaut.*, Jan., 1928, pp. 8-12. Tables, graphs.

ON THE PROCESSES IN CONNECTION WITH THE STRETCHING OF CRUDE RUBBER.—E. A. Hauser and P. Rosbaud, *Kaut.*, Jan., 1928, pp. 12-14. Graphs.

REGISTERING HYDRAULIC DYNAMOMETER.—M. C. Cheneveau, *Rev. Gen. Caout.*, Jan., 1928, pp. 9-10. Illustrated.

LATEX CONTAMINATED WITH COPPER COMPOUNDS AS A SOURCE OF DANGER OF FIRE.—J. G. Fol and W. de Visser, *Bull. R. G. A.*, Feb., 1928, pp. 124-127. Illustrated.

JAPANESE TIRE CONSUMPTION

The large number of taxis and the bad condition of the roads are responsible for the high annual tire consumption in Japan, which averages about six to six and a half tires per car.

Statistics compiled at the end of 1926 showed that there were 23,456 taxis, 4,503 private autos and 12,097 trucks registered. The taxis, of course, cover more miles than the private cars, and consequently use more tires, eight to ten per year being a common proportion to each.

SCIENTIFIC ECONOMY IN THE USE OF RUBBER FOR TIRE manufacturing seems to be the answer to reduced American consumption.

Legal Decisions

Patents Suits

CAOUTCHOUC. 1,149,580. Hofmann & Gottlob, new caoutchouc substance and vulcanization products thereof, appeal filed Jan. 4, 1928, 2d Cir., Doc. 9888. The Grasselli Chemical Co. v. National Aniline & Chemical Co., Inc.—*Official Gazette*, Vol. 367, p. 239.

PARACHUTE. 1,273,553. R. H. Upson, parachute, D. C., W. D. N. Y., Doc. E 896, The Goodyear Tire & Rubber Co. v. Irving Air Chute Co., Inc. Injunction granted Jan. 4, 1928.—*Official Gazette*, Vol. 367, p. 239.

NIPPLES. 1,420,287, R. Sanderson, method of and apparatus for making rubber nipples, filed Jan. 3, 1928, D. C., N. D. Ohio (E. Div.), Doc. 2502, The Pyramid Rubber Specialty Co. v. The Lion Rubber Co.—*Official Gazette*, Vol. 367, p. 239.

TIRE FLAP. 1,612,788, J. Walten, tire flap, D. C., E. D. Wis. (Milwaukee), Doc. 2120 C. D., C. O. Tingley & Co. et al v. The Badger Rubber Works. Dismissed Jan. 7, 1928.—*Official Gazette*, Vol. 367, p. 704.

FOOTBALL. The Seamless Rubber Co. *v.* Stall & Dean Mfg. Co., No. 2177, Circuit Court of Appeals, First Circuit.

This is an appeal from a decree of the District Court for Mass. in an equity suit charging infringement of letters patent No. 1,279,936, applied for November 8, 1917, and issued to R. H. Taylor, Sept. 24, 1918; and reissued letters patent No. 15,755, originally applied for Feb. 8, 1922, and reissued Feb. 5, 1924. Both patents are for improvements in footballs and basketballs and are now owned by plaintiff. In the District Court the bill was dismissed on the ground that the claims in issue were invalid for lack of invention.

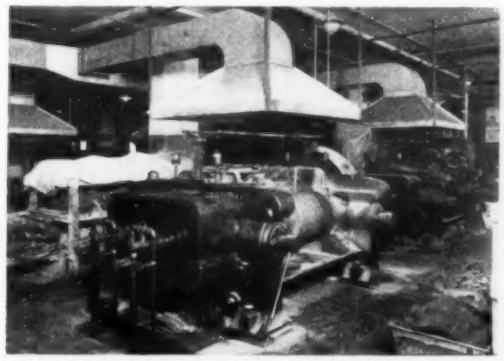
The decree of the District Court was affirmed. Opinion by Judge Bingham.

Customs

COLORED RUBBER BALLS. The Treasury Department, office of the Commissioner of Customs, has instructed collectors to continue the assessment of duty at the rate of 70 per cent ad valorem on certain colored rubber balls.

F. C. STANLEY, PH. D., AND S. A. E. MEMBER, CHIEF ENGINEER of Raybestos Co., Bridgeport, Conn., and with which concern he has been connected for 23 years, gave an address on March 8 before the Engineers' Club, San Francisco, on "Brakes and Brake Problems."

PARA SHIPPED DURING 1927 513 LONG TONS OF BALATA, Hamburg taking the largest amount, 249 long tons, and New York second with 165 long tons. The amount shipped in 1926 was but 11 tons.



TWO HEAVY DUTY STANDARD 60-INCH FARREL MILLS PROVIDED WITH HAND EQUIPMENT FOR REMOVING DUST, HEAT AND FUMES

Obituary

Veteran of the Rubber Trade

George Sherman Andrus, who died March 9 at his home, 166 South Portage Path, Akron, O., had been for many years associated with the rubber industry in the development of which he played an important part.

Mr. Andrus was born February 20, 1865, at Edwardsburg, Mich., received his education in the public schools, afterwards doing private work at Racine College. At the age of eighteen he went to Cassopolis, Mich., where he was employed in a general store until poor health forced him to spend two years on a ranch in the Indian Territory. He then became connected with the Chicago Rubber Clothing Co., Racine, Wis., eventually becoming factory superintendent. He later organized and built the LaCrosse Rubber Co., Lacrosse, Wis., of which concern he was manager until 1908, when he resigned to become manager of the Apsley Rubber Co., Hudson, Mass. In 1911, he was offered the position of manager of the shoe and clothing departments of the Diamond Rubber Co., holding a similar connection with the company upon its consolidation with the Goodrich organization. Resigning from the Goodrich concern, he became a manufacturer of chemicals for the rubber trade, in which occupation he was employed at the time of his death.

G. S. Andrus

Mr. Andrus was married in 1898 to Miss Kathryn M. Rickeman of Racine, Wis., who survives him, together with his four children, James R., Kathryn M., George S., Jr., and Frederick H. Andrus.

Eugene Dickinson Burnell

Eugene Dickinson Burnell died suddenly of a cerebral hemorrhage at Atlantic City, N. J., February 20, 1928. He was forty-three years of age.

Mr. Burnell was vice president of the Overman Cushion Tire Co., with which company he had been affiliated since 1921. A graduate of Cornell, class of 1906, he designed, built and operated during the war one of the largest munition loading plants in the United States at Amatol, N. J. He belonged to the Rockwood Hall Country, Cornell, and Rod and Bob Clubs and was a member of the Societies of Automobile Engineers, Civil Engineers and Mechanical Engineers.

Young Akron Broker Victim of Pneumonia

The death, on March 5, of C. W. Seiberling, Jr., son of C. W. Seiberling, vice president and treasurer of the Seiberling Rubber Co., ended a brave, young life that had been handicapped in recent years by an incessant struggle against physical illness.

C. W. Seiberling, Jr.

A cheerful optimism and friendly personality marked his business activities and relations, despite frequent interruptions when the state of his health required travel and rest.

Acute pneumonia, developing from a heavy cold, was the immediate cause of his death which occurred at his home in Akron, O.

Young Seiberling was born October 14, 1896, and acquired his grade schooling in Henry and Spicer schools. A year at Buchtel Academy followed, going from there to St. John's school, Manlius, N. Y., from which he was graduated in 1915. Entering the rubber business, he spent nearly a year in the Orient studying the buying of rubber in Sumatra, Ceylon and Singapore for the Goodyear Tire & Rubber Co. Upon the entry of the United States into the world war, he returned to Akron and enlisted. Mustered out in 1919, he returned to the Goodyear company and was sent to the New York offices. While in a warehouse of the company, he was struck by a falling crate, aggravating an injury to his spine from which he never fully recovered.

After a period of rest and travel, he formed various business connections which poor health forced him to abandon, and at the time of his death he was conducting an independent brokerage business.

Mr. Seiberling is survived by his widow, who was Miss Cecil Berlage, and by his father and mother, two brothers, Lucius and Karnaghan, and one sister, Catherine.

Henry C. Corson

A former executive of The B. F. Goodrich Co., Henry Clay Corson who died March 4, at his home in Scarsdale, New York, retired about twenty years ago to devote his time to travel and scientific pursuits. Mr. Corson joined the Goodrich company as stenographer shortly after it was founded, and was rapidly advanced holding, at the time of his retirement, the office of executive vice president.

Thomas Kelly

Thomas Kelly, aged 71, foreman of the service department of the Firestone Footwear Co. for the past two years, died at his home in Hudson, Mass., on March 15. He was also chairman of the Town Finance Committee.

John T. Mulligan

John Thomas Mulligan, foreman of the Edgeworth factory of the Boston Rubber Shoe Co., died at his home in Malden, Mass., last month after a brief illness. He was born in Prince Edwards Island 42 years ago, and had been a resident of this city for the past twenty years.

James Farrington

James Farrington, of The Textile Finishing Machinery Co., Providence, R. I., died March 22. His obituary will appear in our next issue.

1927 MALAYAN EXPORTS

Gross exports of rubber from British Malaya during 1927 amounted to 371,322 long tons, and imports 134,252 tons, leaving a net export during the year of 237,070 tons, according to a report issued by the rubber division of the Bureau of Foreign and Domestic Commerce.

Of the total amount of rubber imported during 1927, 37,070 tons consisted of dry rubber and 145,773 tons of wet rubber, which reduced to an approximate dry rubber basis by deducting about one-third for moisture content, is equivalent to about 97,182 tons of dry rubber.

Below are given monthly imports, gross exports and net exports during 1927.

1927	Gross Exports	Total Imports†	Net Exports
January	34,946	10,989	23,957
February	27,528	8,533	18,995
March	41,346	12,787	28,559
April	29,041	9,727	19,314
May	31,393	11,244	20,149
June	32,607	10,882	21,725
July	23,947	9,301	14,646
August	30,371	12,522	17,849
September	29,835	8,970	20,865
October	29,846	11,465	18,381
November	28,277	14,570	13,707
December	32,185	13,262	18,923
Total	371,322	134,252	237,070

* Not including liquid latex, which amounted to more than 2,000 tons of dry rubber in 1927.

† Total imports have been reduced to an approximate dry rubber basis by deducting 33⅓ per cent for moisture content of wet rubber imported.

Financial and Corporate News

Dividends Declared

Company	Stock	Rate		Payable	Stock of Record
Asbestos & Rubber Prod. Corp.		Com.	2½% q.	Mar. 15	Mar. 5
Faultless Rubber Co.		Com.	$0.50 q.	Apr. 2	Mar. 15
Faultless Rubber Co.		Pfd.	1¾% q.	Apr. 2	Mar. 15
Firestone Tire & Rubber Co.	6%	Pfd.	1½% q.	Apr. 15	Mar. 30
Fisk Rubber Co.	2nd	Pfd.	1¾% q.	Mar. 1	Feb. 15
General Tire & Rubber Co.	7%	Pfd.	1¾% q.	Apr. 1	Mar. 20
General Tire & Rubber Co. (initial)	6%	Pfd.	1½% q.	Mar. 31	Mar. 20
Goodyear Textile Mill		Pfd.	$1.75 q.	Apr. 2	Mar. 20
Goodyear Tire & Rubber Co.		Pfd.	1¾% q.	Apr. 1	Mar. 1
Goodyear Tire & Rubber Co.	1st	Pfd.	1¾% q.	Apr. 1	Mar. 1
Goodyear Tire & Rubber Co. of Calif.		Pfd.	1¾% q.	Apr. 2	Mar. 20
Goodyear Tire & Rubber Co. of Canada		Com.	$1.25 q.	Apr. 2	Mar. 15
Goodyear Tire & Rubber Co. of Canada		Pfd.	1¾% q.	Apr. 2	Mar. 15
Hood Rubber Co.		Com.	$1.00 q.	Mar. 31	Mar. 20
India Tire & Rubber Co.		Pfd.	1¾% q.	Apr. 2	Mar. 20
Intercontinental Rubber Co.		Com.	$0.25 q.	Mar. 31	Mar. 24
Seiberling Rubber Co.		Pfd.	2% q.	Apr. 1	Mar. 20

New York Stock Exchange Quotations

March 26, 1928

Company	High	Low	Last
Ajax Rubber, com.	11⅛	10⅛	11
Fisk Rubber, com.	16¼	15⅛	15⅝
Fisk Rubber, 1st pfd. (7)	88	88	88
Fisk Rubber, 1st pfd. cv. (7)	94½	94½	94½
Goodrich, B. F., com. (4)	85	82¼	84⅜
Goodrich, B. F., pfd. (7)	111½	111½	111½
Goodyear Tire & Rubber	57¼	55⅞	57
Goodyear Tire & Rubber 1st pfd. (7)	95½	95	95
Intercontinental Rubber (1)	15¾	15½	15½
Kelly Springfield Tire, com.	24	21⅝	24
Lee Rubber & Tire, com.	19⅝	19	19
Miller Rubber, com.	23½	23½	23½
Norwalk Tire & Rubber	3	3	3
United States Rubber, com.	46½	45⅝	45¾
United States Rubber, 1st pfd. (8)	90¾	89¼	90

Akron Rubber Stock Quotations

March 20, 1928

Company	Bid	Asked
Akron Rubber Reclaim	21	22
Akron Rubber Reclaim, pfd.	...	99
Falls	5	8
Falls, pfd.	10	19
Faultless	37	38
Firestone	175	...
Firestone, 1st pfd.	110½	...
Firestone, 2nd pfd.	108½	109½
General	165	170
General, 6% pfd. Series "A"	101¼	102
Goodrich	...	...
India	18	20
Miller, pfd.	90	92½
Mohawk	...	40
Mohawk, pfd.	72	75
Rubber Service	...	44
Seiberling	38	41
Seiberling, pfd.	102	104
Star	1	5

Rubber Company Bonds

	Range for Year 1927			
	High	Low	Last	Net Ch'ge
Ajax Rubber Co. s f 8s '36	109⅞	105⅞	107 +	1½
Fisk Rubber 8s 1941	120	115	119 +	2¼
Goodrich (B. F.) 1st 6½s 1947	108¼	104⅝	107¾+	1½
Goodyear T & R Co. 8s '41	122½	119⅞	119⅞—	2⅛
Goodyear T & R deb 8s '31	111¼	109⅞	110¼+	⅛
Goodyear T & R 5s '57	97⅜	91¼	94¼+	...
Kelly-Springfield T s f 8s '31	109½	99½	108½+	4
U S Rubber 5s 1947	96¼	88	95¼+	¾
U S Rubber 7½s 1930	106¾	103	104¾—	1¼

BATHING CAPS OF AMERICAN MAKE ARE VERY POPULAR ON French beaches, their quality and bright coloring being superior to any other kind.

United States Rubber Co.

TO THE STOCKHOLDERS: The following is a report of the operations of the company for the year ended December 31, 1927 and of the financial condition of the company as of the close of the year. Sales for the year amounted to $193,442,945, a decrease of $22,085,364, or 10.25 per cent, compared with 1926. This decrease was more than accounted for by an average reduction in selling prices of 13½ per cent. There was a substantial increase in unit volume of sales of commodities other than tires, constituting about two-thirds of the total sales, which practically offset the reduction in selling prices of these commodities. The decrease in total sales as stated above was due principally to reductions in prices of tires, and to a reduction in unit sales of tires to automobile manufacturers.

As explained in the annual report for 1926, inventories were not written down as of December 31, 1926, because of the continuing uncertainty of crude rubber market prices, as indicated by the wide and violent fluctuations which had occurred during the two years preceding, but the entire surplus earnings for that year, amounting to $8,535,380, were set aside as a reserve for such adjustments of inventories as might be found necessary. Developments during the early part of 1927 indicated a fairly well stabilized market at about the level of prices prevailing as of the first of the year. Therefore, inventories carried over from 1926 were adjusted as of January 1, 1927, to bring the value of crude rubber and of the rubber content in finished goods and goods in process to the cost of replacement at current market prices, for which adjustment it was necessary to use the entire amount of the reserve above mentioned, together with $8,910,679 from surplus. In connection with this adjustment, $8,000,000 was transferred from the surplus of United States Rubber Plantations, Inc. After making these adjustments, the results for the year 1927, and the financial condition as of the close of the year, were as follows:

Net income from operations for the year, before interest on funded indebtedness and estimated depreciation of plants, but after all other charges, amounted to	$12,522,952
Net earnings of U. S. Rubber Plantations, Inc., for the year amounted to	4,000,000
making a total of	$16,522,952
Interest on funded indebtedness amounted to	6,290,900
leaving net income from operations, after interest charges, of	$10,232,052
Dividends on the preferred stock amounted to	5,226,489
leaving	$5,005,563
Provision for estimated depreciation of plants amounted to	3,980,571
thus making net surplus earnings for the year of	$1,024,992

The consolidated surplus as of December 31, 1927, amounted to $40,146,387. Current assets as of December 31, 1927, amounted to $134,639,166, and current liabilities amounted to $34,451,562.

Current assets consisted of:	
Cash	$7,535,052
Accounts receivable, less reserve for doubtful accounts	49,912,107
Total cash and receivables	$57,447,159
Inventories of finished goods and raw materials	71,302,637
Crude rubber in transit to New York	5,889,370
Total current assets	$134,639,166
Current liabilities consisted of:	
Bank loans	$11,750,000
Accounts payable, including acceptances payable for importation of crude rubber	18,204,202
Drafts and acceptances for crude rubber in transit to New York	4,497,360
Total current liabilities	$34,451,562

Inventories of raw materials, including crude rubber, as of December 31, 1927, were at or below the current market prices, and inventories of finished goods were at or below cost of replacement at current market prices for raw materials. Contractual liabilities, representing forward commitments for raw materials and supplies, including crude rubber, were at or below market prices, and as to quantities covered future requirements for conservative periods. Crude rubber shipped against forward purchases, which had not been received at New York December 31, 1927, amounting to $5,889,370, was taken into account and is shown in the balance sheet at cost, which was substantially below the market.

The company retired $2,875,400 of funded indebtedness during the year, consisting of: $691,400 of 5 per cent bonds and 184,000 of 7½ per cent notes, retired through the operation of the sinking funds, and 2,000,000 of 6½ per cent serial gold notes paid March 1, 1927.

The company had a contingent liability, as of December 31, 1927, as endorser of a note of The Beacon Falls Rubber Shoe Co., in the sum of $2,000,000. There were trade acceptances and drafts against export shipments, discounted by subsidiary companies and outstanding as of December 31, 1927, in the sum of $1,249,455.

Federal taxes for the years subsequent to 1917 have been the subject of conferences with the Treasury Department during the year, and agreements satisfactory to the company have been reached concerning many important items, while the findings of the Treasury Department with respect to some others have been accepted. Items not agreed upon in the return for the year 1918 have been taken to the Board of Tax Appeals, while as to later years, substantial refunds will ultimately be made to the company as the result of agreements already reached. The net amount to be paid upon final determination of all items in question for years subsequent to 1917 will be more than covered by reserves heretofore provided, assuming that the company's position as to these items is sustained.

The company closed the year in a strong financial position.

C. B. SEGER, Chairman.

Approved by the Board of Directors, March 8, 1928.

Mohawk Rubber Co.

The Mohawk Rubber Co., Akron, O., held a special meeting on March 5, at which meeting the articles of incorporation were amended to increase the number of shares of no par common stock from 25,000 to 35,000. It was voted to increase working capital by issuing $800,000 in gold debenture bonds.

Of the additional shares of common stock authorized, 5,000 shares were purchased by present stockholders. The proceeds will be used to retire immediately the 8 per cent gold notes which were issued for temporary financing early in 1927.

The Fisk Rubber Co.

TO THE STOCKHOLDERS: The company has changed its fiscal year from October 31 to conform to the calendar year and reports hereafter will be on that basis. In addition to the subsidiary selling companies heretofore included in the company's balance sheet, the present consolidated statement now includes the accounts of The Fisk Tire Fabric Co. and The Fisk Rubber Co. (Far East), Ltd., which is the company's crude rubber purchasing office in the Straits Settlements.

Sales for the fourteen months ended December 31, 1927, totaled $72,404,002 as against $68,051,739, for the twelve months ended October 31, 1926. Dollar sales for the fourteen months ended December 31, 1927, were 6 per cent less than for the same relative period in 1926. Due to lower level of selling prices this comparison does not reflect the gain in business enjoyed by the company as unit sales for the same period of 1927 increased 14½ per cent.

Profits for the fourteen months ended December 31, 1927, before charges and preferred dividends, were $4,839,854, and after charges the amount available for dividends was $2,620,721. For the greater part of 1927 the company was operating as it was throughout the previous year in a falling crude rubber market, although the readjustment was not so drastic as in 1926.

During the last three fiscal periods there occurred a sharp inflation and an equally sharp deflation of crude rubber prices. In that entire period of three years and two months profits before charges and preferred dividends annually averaged $6,835,941, and the amount available for dividends annually averaged $3,953,951. The annual average earning power upon the combined preferred issues was $19.45 per share and the balance for the common was at an annual average rate of approximately $3 per share.

During this three year and two months period, the company has revamped its entire manufacturing plant lay-out to the end of developing the most up-to-date and efficient methods of operation. There have been installed the most modern machinery and equipment and conveyer systems, which will result in lower manufacturing costs. The productive capacity of the plants during this period has been increased over 25 per cent. Although these additions and improvements involved a cash expenditure of approximately $6,500,000, substantially all of this sum has been absorbed in operating costs through depreciation and obsolescence charges.

The financial position of the company remains exceptionally strong. At December 31, 1927, there were no bank loans outstanding and current assets were $32,726,000 in excess of current liabilities with a ratio of current assets to current liabilities of 9½ to 1.

During the year, $1,256,000 par value of 5½ per cent sinking fund gold notes, due 1931, were purchased, $256,000 of which were used for current sinking fund requirements, leaving $1,000,000 held in the treasury. In addition, the company also purchased in the open market $1,210,000 7 per cent first preferred stock and now holds in the treasury a total of $2,154,800. These purchases will result in an annual saving in interest and dividends of over $220,000.

H. T. DUNN, President.

CONSOLIDATED BALANCE SHEET, DECEMBER 31, 1927

ASSETS

Capital assets	$22,319,055
Investments	2,681,403
Sinking funds	230,750
Current assets	36,654,454
Deferred charges	1,107,089
Total	$62,992,751

LIABILITIES

Capital stock	$28,756,295
First mortgage 8% sinking fund gold	8,370,000
Five-year 5½% sinking fund gold	8,615,000
The Fisk Tire Fabric Co. first mortgage 6½% sinking fund gold bonds	1,500,000
Current liabilities	3,927,782
Reserve for contingencies	525,567
Surplus	11,298,107
Total	$62,992,751

New Incorporations

B & S TIRE & AUTO SUPPLY CO., INC., February 28 (New York), $20,000. J. Bodofsky, 1897 Coney Island Ave.; N. Sider, 2038 71st St.; H. Bodofsky, 2149 64th St., all of Brooklyn, N. Y. Principal office, Manhattan. To manufacture tires, etc.

BENDER, WICKSTROM & CO., INC., January 18 (Massachusetts), $10,000. G. Wickstrom, president, 49 Worthington St., Boston; A. Bender, treasurer, 9 Academy St., Arlington; D. P. Shapalis, clerk, 29 Templeton St., Dorchester; J. Wereska, 53 Cushing St., Stoughton, all in Mass. Principal office, Boston, Mass. To deal in rubber, cotton, etc.

S. BRODY TRADING CORP., March 9 (New York), $50,000. S. Brody, 1070 East 24th St., E. L. Ballin, 1004 Union St., both in Brooklyn; J. T. McCoy, 57 William St., New York, both in N. Y. Principal office, Manhattan. Rubber, etc.

ELASTIC FABRICS CORP., March 4 (New York), capital stock 100 shares no par value. Mr. Deixler, N. Elman and W. J. Keeley, all of 342 Madison Ave., New York, N. Y. Principal office, Manhattan. To manufacture rubber elastic fabrics.

E. J. HAND & CO., INC., February 21 (New York), capital stock 100 shares no par value. M. Deixler, N. Elman and W. J. Keeley, all of 342 Madison Ave., New York, N. Y. Principal office, Manhattan. Rubber goods.

L. & H. RUBBER CO., INC., March 8 (New York), capital stock $1,000 par value $10. W. and A. Friedlander, 2664 Atlantic Ave., Brooklyn, J. J. Horowitz, 882 Beck St., Bronx., both in N. Y. Principal office, Bronx County, N. Y. To manufacture tires, etc.

REIS RAINWEAR CORP., March 14 (New York), $10,000. J. G. Rosenhaus, G. L. Kaplan, A. J. Drosnes, all of 51 Chambers St., New York, N. Y. Principal office, Manhattan. To manufacture rubber clothing.

ROYAL RUBBER CO., INC., February 6 (Massachusetts), $50,000. A. L. Fistel, president, 565 Norfolk St., M. H. Hatch, treasurer, 6 Rosedale St., both of Mattapan, H. Heller, clerk, 68 Devonshire St., Boston, both in Mass. Principal office, Boston, Mass. To manufacture rubber clothing.

STEPHEN GOLDBERG CORP., February 27 (New York), $25,000. M. Weinstein, 117-01 109th Ave., J. T. Stephens, 104-32 106th St., both of Richmond Hill, H. Goldberg, 1861 74th St., Brooklyn, both in N. Y. Principal office, Manhattan. To manufacture rubber products.

ACCORDING TO THE REVISED OFFICIAL FIGURES OF THE U. S. Census Bureau, there are 155 manufacturers of passenger cars and trucks in the U. S. The number of cars manufactured during 1927, 3,393,887, was less than the total number for 1926 which was 4,298,799.

The Rubber Industry in America

Ohio

Herbert Andress of The Cleveland Equipment & Engineering Co., Cleveland, O., bought the building and equipment of the Studebaker-Wulff Rubber Co. of Marion. Mr. Andress acquired the property from the Equipment Co., Inc., Trenton, N. J., who bought it in August, and will hold it intact for two or three weeks. In the event that no purchaser materializes during that period, the equipment is to be dismantled and sold.

The Triangle Tire & Rubber Co., Canton, O., reports that sales for 1927 exceeded 1926 by 47 per cent and expects that 1928 will surpass both previous years. According to M. C. Wyatt, assistant treasurer, there has been a considerable falling off in the demand for lower grade tires and a corresponding increase in the sale of the high quality line. At a recent meeting of the board the directors were all reelected with the exception of C. J. Parker, who replaced G. C. Pontius, deceased.

The Buttonless Tire Cover Co., Canton, O., is planning a two-story addition which will add 12,000 square feet to the present floor space of the plant. The company became affiliated, last December, with the Potter Mfg. Co. of Eugene, Ore., and the two plants now turn out 10,000 tire covers daily. E. E. George is secretary and treasurer, and the vice president, E. J. Palmer, is in charge of the Akron office located in the Federal Oil & Gas Bldg., on North Union St.

G. H. Hilbish has joined the sales force of the Lambert Tire & Rubber Co., Akron, O. Mr. Hilbish's connection with the rubber industry covers a period of over twenty-two years, during which time he has been with the Goodrich, Goodyear and Star organizations.

The Mohawk Rubber Co., Akron, O., at a special meeting held at the company's offices, March 5, re-elected S. S. Miller president and general manager, and J. B. Huber vice president. J. F. Jones, general sales manager, was elected to the office of vice president in charge of sales, and R. E. Block, treasurer, was made vice president in charge of finance. H. H. McCloskey and H. H. Matz were re-elected to the offices of secretary and assistant treasurer, respectively.

Dr. J. Teppema who was research chemist with the Goodyear Tire & Rubber Co., Akron, O., for four years, has become associated with the C. P. Hall Co., chemical manufacturer and raw material agent of Akron. In his association with the Hall company, he will engage in technical sales and research work. While with the Goodyear, Dr. Teppema's work was in the line of accelerators and rubber compounds.

The Mason Tire & Rubber Co., Kent, O., has named C. L. Bollinger manager of local advertising and sales promotion department. Mr. Bollinger returns to the Mason company after a three years' absence during which period he was in a jobbing business with his brother.

Carl Bly has been appointed tire sales analyst with The B. F. Goodrich Co., Akron, O. He had previously been connected with the Mason Tire & Rubber Co., the Goodyear Tire & Rubber Co. and the Republic Rubber Co.

The Star Rubber Co., Akron O., closed April 1 for an indefinite period. Officials of the company, which makes tires, tubes and flaps, say reorganization is contemplated.

J. D. Tew President of The B. F. Goodrich Co.

At a special meeting of the directors of The B. F. Goodrich Co., held in the New York offices at 1780 Broadway on March 23, the resignation of Harry Hough as president was accepted and J. D. Tew was elected in his place. Mr. Hough will remain a director and member of the Executive Committee. T. G. Graham will succeed Mr. Tew as first vice president and T. B. Tompkinson, controller, and V. I. Montenyohl, treasurer, have been made members of the board to fill vacancies.

Officials of the company refused to make any comment on these latest developments but intimated that the previous policies of the organization would be continued.

Radio Communication Between Liberia and Akron

The first direct radio communication between Liberia and Akron was established on March 19 with receipt of a message from Harvey S. Firestone, Jr., who is at present on an inspection trip to the rubber plantations of the Firestone Tire & Rubber Co. in Western Africa. The message was sent from a station 4,600 miles distant to the station erected on the roof of the Firestone factories at Akron.

Mr. Firestone, in his first report, said that the Liberian government officials were cooperating in the company's efforts to make Liberia an important rubber producing country. He also reported that during the past year the field forces had laid out two 50,000 acre plantations, one on the Du River and the other 150 miles south on the Cavalla river.

Goodyear's Assistant Sales Manager

George A. Waddle, assistant sales manager of the Goodyear Tire & Rubber Co., at Akron, O., enjoys the unusual distinction of being not only well drilled in the art of selling rubber goods, but also having been exceptionally proficient in counseling clients and convincing courts. For

G. A. Waddle

ten years he was a practicing lawyer, and now many refer to him as Judge Waddle.

Born in Brilliant, O., Mr. Waddle was educated in Bethany College, receiving the degree of A. B. in 1901, and in Western Reserve University, where he won an LL.B. in 1905. Legal work occupied the interval from 1905 to 1915 in Cleveland, O. In the latter year he yielded to the urge for merchandising, and, joining the dealers' division in the automobile tire department of the Goodyear company in Akron, he showed such marked aptitude for his new work that he was before long made manager of the dealers' sales department. Next he was appointed manager of the dealer relations department, and finally made assistant sales manager.

Mr. Waddle represented the Goodyear company for about five years on the Tire Executive Committee, Tire Manufacturers' Division, Rubber Association of America, and was chairman of the Division for two years, 1925-6, during his incumbency aiding in no small degree in solving many knotty problems in production, merchandising, standardization, etc. Mr. Waddle is a member of the college fraternity Sigma Nu; University Club, Akron; University Club, Washington, D. C. (non-resident); and of the Fairtown Golf Club, Akron.

L. C. Rockhill has been elected to the Board of Directors of the Miller Rubber Co., Akron, O. Mr. Rockhill was recently made general sales manager.

Rex Tire & Rubber Co., Wadsworth, O., formerly The Wadsworth Rubber Co., Exel Rubber Co. and Grubb Rubber Co., is reported to be in receivership.

Annual Meting of Miller Rubber Co.

At the annual meeting of the stockholders of The Miller Rubber Co., Akron, O., the financial statement presented showed the company to be in sound financial condition.

Jacob Pfeiffer, William F. Preiffer, L. C. Rockhill, C. T. Grant, F. B. Theiss, J. M. Doran, R. T. Griffiths, H. T. Holmes, R. R. Jennings and H. S. Parker were elected to the board of directors, which in turn elected the following officers: Jacob Pfeiffer, president; C. T. Grant, vice president, and W. F. Pfeiffer, secretary and treasurer.

Social Club for Goodrich

A get-together party was held in the K. of C. Hall, Akron, O., February 17, and the All-For-One-One-For-All Club was formed by 800 men: officials, department heads, factory foremen and process engineer of The B. F. Goodrich Co. The organization plans to bring together the key men of various groups representing all activities in manufacturing and selling.

Gates Ferguson acted as toastmaster and short talks were given by T. G. Graham, new member of the board of directors, and E. C. Stoner, process engineer. A special feature of the evening was a surprise trip to California, movies of the Pacific Goodrich factory in Los Angeles having been taken on February 10 and rushed to Akron by airplane for the party.

Similar parties will be held from time to time with the idea of developing the social side of the association.

Hankins Company Organized

The Hankins Rubber Co., Massillon, O., was incorporated January 14, 1928, for $100,000, all common stock, for the purpose of manufacturing a full line of surgeons' rubber gloves. The factory will be equipped with the latest and best machinery.

The executive personnel of the company, all experienced men, is as follows: S. Bert Hankins, president; William J. Ries, vice president, and Laura E. Hankins, secretary and treasurer. Mr. Ries will also act as superintendent of the factory, having had ample experience in the manufacturing of gloves, and serving during the war as government inspector for England.

THOROBRED EMBLEM

The illustration shows the legally protected emblem which The Dayton Rubber Mfg. Co., Dayton, O., is now using in all of its advertising of Thorobred tires and tubes, according to Edwin B. Self, advertising and sales promotion manager.

The name "Dayton Thorobred" was originally conceived by Mrs. John A. MacMillan, wife of the president, in the early days of the company's history.

A. S. T. M. Meetings

COMMITTEE D-11

The Spring Meeting of Committee D-11, A. S. T. M., on Rubber Products was held at Hotel Portage, Akron, O., March 15 and 16, 1928. Attendance of 63 members and guests, indicated unusual interest in the activities of the committee.

The general plan of the committee to develop methods of test to be a guide in determining the service of rubber products, rather than mere type specifications has given the committee a very constructive program for research which will require several years of development work among producers and consumers of rubber products. The Subcommittee on Mechanical Rubber Hose advised that there was a demand on the part of the consumer, for air and hot water hose with more resisting properties to the action of oil than that complying with the present A. S. T. M. specification for such hose. The Subcommittee on Rubber Belting was most fortunate in having as a guest, David L. Trax, chairman of the committee on belting, American Petroleum Institute. Mr. Trax outlined the program the A. P. I. had followed in developing a specification for rubber belting, necessary to meet the requirements for oil field service, recognized by the engineering profession as probably the most severe for transmission belting.

Having been granted the privilege of using the A. P. I. data in conjunction with other data at hand, the subcommittee has recommended the following program: (1) The development of a standard procedure for testing rubber belting; (2) A classification of rubber belting as to types of transmission, conveyer and elevator belts.

The Subcommittee on Insulated Wire and Cable is developing a performance test for the rubber composition necessary for the various types of insulating requirements and a specification for rubber insulation for ignition wire.

Subcommittee on Standard Procedure for Testing Rubber Products, reported that the active work at present was being carried on in conjunction with the Physical Testing Committee, Rubber Division, A. C. S.

Subcommittee on Life Tests has adopted the following program, covering three type stocks to be tested by twelve laboratories: (1) Natural aging, exposed to air in the dark; (2) Natural aging, exposed to weather in natural light; (3) Artificial aging, Geer method; (4) Artificial aging, Bierer-Davis method.

Subcommittee on Flexing of Rubber Products has been making an extensive study of the U. S. Rubber Co. flexing machine in testing rubber transmission belting. Five machines are being operated in as many factory laboratories, indicating from the results that the machine gives a satisfactory factory control test. The variations are still too great to permit the test to be incorporated as a part of a specification for the manufacture of rubber belting.

Subcommittee on Abrasion discussed at length the data already at hand from different laboratories, on comparing various types of abrasion machines with service tests made on the rubber compounds being studied. It is now preparing a tentative standard method for operating a number of the better known abrasion machines.

Subcommittee on Rubber Products for Absorbing Vibration has succeeded in the brief period of six months in getting the instrument manufacturers to work with them in developing a hardness test. The Committee defines "hardness" with respect to rubber products as resistance to deformation and penetration, and recommends that an instrument for measuring hardnesss should have the following characteristics: Speed, accuracy of operation for routine testing by non-technical workers. Capable of duplicating results within ½ per cent, readily calibrated, dead weight load, ball type penetrometer, dial for measuring penetration, must permit attachment of special holders for production testing of pieces of odd size and shape.

The meetings closed with an informal dinner Thursday, March 15, that was well attended.

COMMITTEE D-13

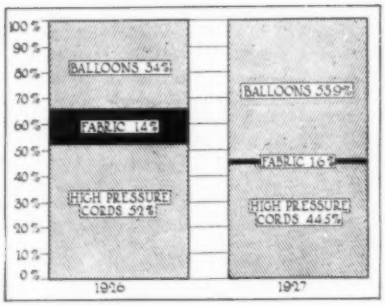
Committee D-13 of the American Society for Testing Materials met on March 1 and 2 at Providence, R. I. The committee discussed the need of specifications for particular fabrics, and Dr. W. F. Edwards, chairman amplified his suggestion of last fall on the need of the committee for a central laboratory for securing data on many important questions. Three formal papers were presented. These were "A Strength Test for Knitted Fabrics," by W. H. Whitcomb of the U. S. Rubber Co: "A Practical Program for Humidity in Textiles" by Professor George B. Haven of the Massachusetts Institute of Technology; and "Genetics in Textile Research" by Dr. W. F. Edwards of the U. S. Testing Co., Inc.,

SEIBERLINGS RIVALS IN CONVENTION PRIMARY

Frank A. and Charles W. Seiberling, president and vice president respectively of the Seiberling Rubber Co., are rivals, politically, both being candidates for the primaries at which convention delegates will be elected. Frank has thrown in his lot with the Willis movement, but Charles favors Hoover.

CREDIT FOR NATIONAL RESERVE

The National Bank of Commerce, New York, and the International Acceptance Bank, Inc., have arranged a credit on behalf of the National Reserve for Crude Rubber, commonly known as the American Rubber Pool. The credit provides for $30,000,000 now and an additional $30,000,000 if and when required.



Automotive Industries

In 1927 balloon tires comprised 53.9 per cent of the United States tire production.

BOTTLE HOLDER HAS CAPS

An idea which Dr. W. Barclay Stephens, Alameda, Calif., passes on to fellow practitioners and which may find many other than clinical uses is that of a bottle holder which dispenses with corks, the latter being replaced with caps hinged to the back of the holder and having on their under side pads of soft rubber. A spring impinging on the rear end of the cover keeps it against the top of the bottle when closed and upright when the cover is lifted. The cover is dust proof and tight for non-volatile liquids. The under side of the holder is weighted with sheet lead. The doctor states that the device makes it much easier to use bottles on an operating stand, saves them from overturning, saves time in corking and uncorking, and fingers from being stained by various solutions.

U. S. SPECIFICATION RUBBER GOODS

The National Bureau of Standards had up to February 1, 1928, compiled 146 lists of firms who are willing when requested to certify to purchasers that material supplied complies with the tests and requirements of the United States Master Specifications and is so guaranteed. Copies of lists, which are constantly being amplified, can be had from the bureau in Washington, D. C., gratis. A labeling system is being developed in connection with the certification plan for the benefit of small buyers.

QUICK-DRYING TIRE PAINT

A quick drying tire paint, said to be quite efficient, contains these ingredients: anti-oxidant 10, mineral rubber 10, ceresine wax 10, carbon black 5, solvent 35; total, 70 lbs.

RECLAIMED RUBBER LABORATORY

The Bureau of Standards has given over one of its laboratories to be devoted exclusively to investigations for the improvement of methods for reclaiming rubber. A special study is being made of the theory of vulcanization as it is thought that the best results may be obtained through the desulphurization of vulcanized rubber.

New Jersey

Rubber conditions in New Jersey are showing some improvement and manufacturers believe that with the advent of good weather business will be more settled. Orders for mechanical rubber goods are reported to be on the increase, there being a good demand for hose, packing, heels and soles. The hard rubber industry has shown but little improvement recently. While the tire and tube output is not up to normal improved conditions are looked for. Concerns manufacturing rubber tiling say business is better than it has been for some time.

The Rubber Manufacturers' Association of New Jersey held its late winter meeting in March at the Stacy-Trent Hotel, Trenton, N. J. Following the dinner, the rubber situation was discussed.

Art H. Massey, general sales manager of the Combination Rubber Co., Trenton, N. J., is optimistic over the future and believes there will soon be an increase in the demand for tires and tubes.

The Puritan Rubber Co., Trenton, N. J., recently completed a plant addition to accommodate increasing business and the manufacture of rubber tiling. The plant is operating with a night shift.

The Raymond Rubber Co., Lambertville, N. J., manufacturer of reclaimed rubber, has been closed down for some time. It is not known when the factory will be put in operation again.

The Lambertville Rubber Co., Lambertville, N. J., which recently consolidated with the Goodyear Rubber Co. at Middletown, Conn., has completed the removal of the machinery to the New England town. The Lambertville plant will be used as a warehouse for the time being.

The Fisk Flap Tube Rubber Co., Yardville, N. J., has not reopened its plant since the death of C. Francis Fisk, vice president of the concern. It is not known when it will be started again.

Milton H. Martindell, secretary of the Joseph Stokes Rubber Co., Trenton, N. J., has been elected a director of the Capital City Trust Co., Trenton.

The Luzerne Rubber Co., Trenton, N. J., manufacturer of hard rubber goods, reports that business shows but little improvement.

The Pierce-Roberts Rubber Co., Trenton, N. J., states that orders are becoming more plentiful with prospects for a good summer season.

The Mercer Rubber Co., Trenton, N. J., announces that business is fairly good at this time and that better conditions are anticipated.

Dave and Jack Stern, distributers of The Dayton Rubber Mfg. Co., Paterson, N. J., were recent visitors to the Dayton plant. The Stern brothers signed a contract that calls for them to dispose of $800,000 worth of Dayton tires within the next twelve months.

The Murray Rubber Co., Trenton, N. J., announces that C. Edward Murray, Jr., president of the Murray Co., and his brother-in-law, Thomas Morrison, Jr., have acquired all the common stock and about seventy per cent of the preferred stock of that concern. Messrs. Murray and Morrison have placed in the treasury of the rubber company more money to finance increasing orders for the new De Luxe tires. Mr. Morrison, who has been vice president of the Murray Rubber Co., has been connected with the plant for several years. He is the son of Thomas Morrison of Pittsburgh, Pa., a director of the United States Steel Corp.

The Thermoid Rubber Co., Trenton, N. J., states that there has been no change in production during the past month, but increasing orders are expected from the company's various agencies throughout the United States.

I. Ely Reed, treasurer of the Mercer Rubber Co., Trenton, N. J., has returned from an extensive business and pleasure trip to Florida and Cuba. He was absent for a month.

The Essex Rubber Co., Trenton, N. J., continues busy in all departments and is supplying the spring trade with soles and heels.

L. A. Ragot has been made assistant sales manager of the Michelin Tire Co., Milltown, N. J., succeeding T. Voorhees, who recently resigned. Mr. Ragot has been connected with the Michelin company since 1911.

Thomas M. Pheasey, former master mechanic of the Lambertville Rubber Co., Lambertville, N. J., has taken a position with The Cotex Corp., Newark, N. J.

Ace Rubber Co., Union Hill, N. J., has placed its complete mechanical equipment on sale.

The Rodic Rubber Co., Garwood, N. J., manufactures mechanical rubber goods. C. T. Dickey is general manager.

Frederick J. Maywald, well known consulting chemist, recently acquired a building approximately 100 by 100 feet located in Carlstadt, N. J., where, after necessary alterations, he will move his laboratory. Meanwhile, he will continue to serve his clientele at the present laboratory location, Main and William streets, Belleville, N. J.

VALUE OF RUBBER PROBE

A great diversity of opinion is expressed by tire manufacturers of Akron regarding the proposed appropriation by the Department of Agriculture, of $100,000 for rubber research and exploration. In some quarters it is thought that this will be an effective means of abolishing high prices; while others express the belief that this sum is so insignificant, compared to the sums expended by individual companies, that it will have no effect whatever.

Massachusetts

The Firestone Footwear Co., Hudson, Mass., and the company's cotton mills at Fall River are to be linked with the headquarters of the concern in Akron by short wave stations according to construction applications filed with the Federal Radio Commission. Authority is asked to construct 500-watt stations at each point to communicate with Akron on two wavelengths in the vicinity of 22 and 43 meters.

The Hood Rubber Co., Watertown, Mass., has a very attractive window display of tires, footwear and radio panels in the store of Jordan Marsh Co., Boston. This display is to be given for two weeks starting March 19 in conjunction with the Art in Industry Exposition conducted by the above store.

E. D. Manley, formerly manager of the Boston branch of the Firestone Tire & Rubber Co., has joined the New England division of the Miller Rubber Co. in an executive capacity.

The Standard Rubber Co., Mansfield, Mass., was recently organized to manufacture heels and tiles and also to reclaim rubber. Officials are: W. A. Sanborn, president; T. A. Farrell, treasurer; and A. C. Ruger, secretary.

The Mohawk Rubber Co.'s Boston branch has been moved to larger quarters at 1249 Boylston St. Increased business in the Boston district, with the consequent necessity of larger storage space for tires and tubes, is responsible for the change in location.

The Boston Tire Dealers' Association held its second annual banquet on March 15, 1928, at the Chamber of Commerce Bldg. After an orchestral musical program, the association was addressed by members of Boston business organizations on the value of industrial unity and its application to the tire trade.

J. R. Philbrook has recently been appointed Boston branch manager of the Ajax Rubber Co., succeeding Edward S. Kidder, who plans later to enter business on his own initiative. Mr. Philbrook is widely known in New England tire circles through his connection for several years with the Boston branch of the Kelly-Springfield Tire Co.

The Hood Rubber Baseball League gave a benefit performance before a capacity house at the Coolidge Theatre in Watertown last month.

The Fisk Rubber Co., Chicopee Falls, Mass., has appointed R. P. Harvey to take over the duties, recently relinquished by E. C. Taylor, in connection with the patent work in the western plant.

Edgar N. Weber, formerly of the production department of the Mishawaka Rubber & Woolen Co., Mishawaka, Ind., has joined the technical service department of the Hood Rubber Co., Watertown, Mass.

L. G. Whittemore, Inc., is now located at new and larger quarters at The Victory Terminal, Atlantic, Mass.

Edmund W. Kendall has been appointed manager of the tape department of the Clifton Mfg. Co., Boston, Mass., with headquarters at the Jamaica Plain factory. Mr. Kendall was formerly general sales manager for Pass & Seymour at Syracuse, N. Y. He has also been in the sales department of the Westinghouse Electric Mfg. Co., and has participated in Electrical Trade Associations activities.

George H. Wood, a member of the sales department of The B. F. Goodrich Rubber Co. for the past twenty years, has been appointed manager of the mechanical sales department of the Boston office.

The Pilgrim Rubber Corp., Pawtucket, R. I., suffered considerable loss both to buildings and stock in a fire recently. The company had recently moved from Woonsocket to the new location at Pawtucket.

Tyer Rubber Co.

Tyer Rubber Co., Andover, Mass., has filed a report as of December 31, 1927, which compares with that of previous year as follows:

ASSETS

	Dec. 31 1927	Dec. 31 1926
Real estate	$558,756	$558,565
Mach. and furn.	472,439	459,054
Merchandise	202,276	181,165
Notes and accts. receivable	189,416	259,114
Cash	52,086	77,395
Securities	41,587	.....
Deferred charges	3,445	18,696
Total	$1,520,005	$1,553,989

LIABILITIES

Preferred stock	$470,200	$495,000
Common stock	426,416	426,416
Accts. payable	13,713	16,557
Notes payable	125,000	180,000
Res. depreciation	331,224	324,401
Surplus	153,451	111,615
Total	$1,520,005	$1,553,989

Hauser Associate Professor M. I. T.

Dr. Ernst A. Hauser has been appointed non-resident Associate Professor of Colloid Chemistry at the Massachusetts Institute of Technology, Cambridge, Mass. Doctor Hauser will deliver his first course of lectures there in the period between June 18 and August 28 and will naturally deal extensively with the chemistry of rubber.

His colleagues and American rubber chemists in general will be glad to know that Doctor Hauser is thus identified with the advancement of rubber chemistry in the United States.

GASOLINE CONSUMPTION

According to figures compiled by the American Motorists' Association, each motorist during 1927 used an average of 550.9 gallons of gasoline and traveled an average of 7,437 miles.

CHAMBERLIN CONSULTANT FOR U. S. RUBBER CO.

The United States Rubber Co. has retained the transatlantic flier, Clarence D. Chamberlin, as consultant in the manufacture of airplane tires. Another noted airman, Joseph A. Faucher, has been made manager of airplane tire sales.

GROWTH OF FISK HOSPITAL

In its sixteen years' existence, the hospital of the Fisk company has grown from one room to an industrial plant hospital with equipment and facilities the equal of any in New England.

When first opened, it was placed in charge of a nurse and supplied with four or five very simple remedies. Cases requiring the care of a physician were referred to outside men. Forty or sixty cases in a twenty-four hour period were usually treated. Additions in buildings, apparatus and drugs were made from time to time, and last year over thirty-four thousand visits were recorded.

GOVERNMENT FAVORS RUBBER POOL

According to William J. Donovan, assistant to the attorney general, at a conference of leading executives called by the Department of Commerce, February 16, an amendment to the Sherman Act would be a detriment rather than a help. Government supervision and control of industry would result, he declared, as the people would not permit monopolistic power to go unregulated.

Mr. Donovan further announced that it was the view of the department that there was no violation of the Sherman law as long as the association of rubber producers permitted all who desired to participate to do so on equal terms, and in view of the fact that the purpose of the plan is to promote trade in this country rather than to restrain it.

RUBBER MOTOR BOATS

At the National Motor Boat Show held in New York, January 20 to 28, outboard motor boats of rubber were a feature. A display by Frank and Julius Herbst, Wilmington, Del., included two such boats, twelve feet long with beams four feet four inches. These manufacturers are responsible for some of the fastest motor boats in the world, and expect to enter two of their rubber boats in a Florida race in the near future.

JUNIOR RUBBER TECHNOLOGISTS

An examination to fill vacancies in the Bureau of Standards, Washington, D. C., and similar positions, will be held for which applications must be on file with the Civil Service Commission not later than April 28. Full information may be obtained from the U. S. Civil Service Commission, Washington, D. C., or the secretary of the U. S. civil service board of examiners at the post office or customhouse in any city.

Eastern and Southern

The Roessler & Hasslacher Chemical Co., 709 Sixth Ave., New York, N. Y., has completed plans for a one story addition to the plant at Niagara Falls, N. Y., the estimated cost, with equipment, to approximate $80,000.

Wood, VanderPyl Co., Inc., has removed its New York offices from 15 Park Row, to larger and more conveniently located quarters at 52 Vanderbilt Ave.

Frank C. Van Cleef, former secretary of The B. F. Goodrich Co., is now affiliated with the Guaranty Co. of New York.

Fred Waterhouse Co., Ltd., announces the removal of its offices to 271 Madison Ave., New York, N. Y.

The Watson-Stillman Co., 75 West St., New York, N. Y., at a recent meeting of its board of directors elected William B. Updegraff vice president in charge of sales. Mr. Updegraff has been connected with the company for the past fifteen years in various engineering and sales capacities.

J. H. Nicholas & Co., Inc., 109 Liberty St., New York, has secured the American and Canadian agency of the chalk whiting division of Cements Portland Artificiels Belges, Hargmignies, Belgium. This chalk whiting, marketed under the trade name of Violet Label, is produced by a new process giving a product of extreme fineness.

Whitten Bros., tire dealers, have just opened a new store at 1400 Broad St., Richmond, Va. G. H. Whitten recently visited the plant of the India Tire & Rubber Co., Akron, O., to make plans for 1928 business.

J. C. Mathews, 300 Madison Ave., New York, N. Y., is the Eastern representative of the Wood Chemical Products Co. This company is a successor to the National Turpentine Products Co. and will maintain offices at Jacksonvile and Gull Point, Fla.

Roessler & Hasslacher Chemical Co., New York, N. Y., at a recent meeting, elected the following officers: Dr. H. R. Carveth, president; P. Schleussner, first vice president; M. Kutz, second vice president; M. J. Brown, assistant vice president; C. Dill, assistant vice president; A. Frankel, treasurer; A. Heuser, assistant treasurer; and P. S. Rigney, secretary.

The Stetson Rubber Co. has been organized at East Butler, Pa., to specialize in the manufacture of retreaded tires. The plant will consist of three units, each 40 by 100 feet, of mill type construction. It is understood that the owners of the Corona Cord Tire Co. have a substantial interest in the new venture.

The Firestone Tire & Rubber Co. has announced plans for the construction of a $250,000 building on the corner of Broad and Lombardy streets, Richmond, Va.

United States Rubber Co.'s growing business in its Pittsburgh, Pa., branch has necessitated the removal to larger quarters, and after April 1 will be located at River Ave. and Pennsylvania R. R. near Ninth St. Bridge, N. S. The new building occupies an entire city square and is equipped with numerous devices to improve and facilitate service.

D. W. Hollingworth, formerly of the technical staff of the National India Rubber Co., Bristol, R. I., one of the United States Rubber Co. branches, is now chemist with the Continental Fibre Co., Newark, Del.

E. B. Smith, chief chemist of the National Turpentine Products Co., Jacksonville, Fla., has made an investigation of the technical advantages of retort pine tar as a rubber compounding ingredient. The results of his study are embodied in specifications defining the grade best suited for rubber makers use.

THIS OIL PAINTING OF CHARLES GOODYEAR BY G. P. A. HEALY IS IN THE RECEPTION ROOM OF CHARLES B. SEGER, PRESIDENT OF THE U. S. RUBBER CO., 1790 BROADWAY. ON EITHER SIDE OF THE PORTRAIT ARE CASES CONTAINING RUBBER CANES MADE BY GOODYEAR.

An Authority on Rubber Planting

As an authority on the cultivation and world-wide merchandising of rubber, few rival in prestige Fred T. P. Waterhouse, president of Fred Waterhouse & Co., Ltd., rubber merchants of New York and Singapore. For many years his forecasts on production and consumption have been eagerly sought by the trade here and abroad. As one of the pioneer planters in

Marques Studio

Fred T. P. Waterhouse

Malaya, an extensive, observant traveler in the major rubber growing regions of both continents, in active touch with the world's rubber markets, and with a large clientele of consumers he has acquired a great fund of practical information which in graphic style he delights in imparting.

Mr. Waterhouse was one of the earliest advocates of growing rubber in territory close to the United States; and to solve the much-debated question as to whether Mexico could be made a great rubber-producing country he made two exploratory visits to the central and southern parts of the republic in 1910 and 1924. He reported that not only could introduced Hevea flourish as well as the native Castilloa even as far north as 18 degrees above the equator, but that if the problems of cheap labor and stable government could be solved Mexico's rubber possibilities would be practically unlimited. He has written many interesting monographs on his favorite subject, and on his return recently from the Far East he treated the members of the Rubber Exchange, New York, to a moving picture exhibit showing all the phases of rubber growing and preparation on Malayan plantations.

Mr. Waterhouse was born in Honolulu, Hawaiian Islands, November 23, 1869. In 1905-1906 he was a member of the House of Representatives in the Hawaiian territorial legislature, and in 1907 was sent by the Board of Agriculture of the territory to investigate the rubber planting industry in Malaya, Dutch East Indies, and Ceylon. His diversions include golf, tennis, and yachting; and his clubs, the University, Honolulu; Phi Gamma Delta Fraternity, New York; Singapore, Selangor, and other local clubs. His address is Fred Waterhouse Co., Ltd., Chartered Bank Chambers, Singapore, S. S.

Pacific Coast

President H. T. Dunn of the Fisk Tire Co., after a lapse of two years, has been visiting the principal cities on the Pacific Coast and doing much toward expanding the sales organization. A salesman himself for thirty years, or since the Fisk company made only bicycle tires, he takes a keen interest in this branch of the business, and is very proud of the efficiency of his large corps of coworkers. Questioned as to the reported intention of the Fisk company to set up a tire factory in the near future on the Coast, Mr. Dunn said that when the output of the Eastern and the Midwest factories reaches 50,000 tires a day the matter of another factory will be very seriously considered, and it is practically certain that its location would be in Southern California. He stated that the present factories have been averaging 36,000 tires a day, and that by the end of spring they would be producing 40,000 daily. The company's extensive plans for increasing output and distribution, Mr. Dunn said, were good evidence of the company's confidence in the business future of the country.

Coast Tire & Rubber Co.'s new directors have outlined an extensive selling programme for the products of their Oakland, Calif., factory, and already under the new plan direct factory branches have been established in Los Angeles, Hollywood, Pasadena, Huntington Park, Santa Monica, Bakersfield, San Jose, Berkeley, and Sacramento, according to President L. S. Budo.

U. S. Rubber Activities

United States Rubber Co.'s general manager of the Pacific Coast division, J. B. Brady, recently completed a trip to the company's northwest branches, holding sales conferences at Portland, Seattle, and Spokane. He was accompanied by E. H. White, manager of footwear sales for the Coast division, and he reports the outlook for business generally as very good. The agricultural conditions were never more promising, the lumber industry is recovering from its long depression, and practically all the communities in that section are forging ahead. E. C. Conlin, manager of golf ball sales, has just finished a trip among all the company branches on the Coast, and reports a surprising increase in sales. J. H. Walters, of New York, manager of rubber tiling sales, has also visited all the Coast branches, and states that rapid strides are being made in marketing this line of products. He remarked that the new Panama Pacific Steamship "California," the largest passenger ship ever built in the United States, and which recently reached San Francisco and Los Angeles, is equipped with 30,000 square feet of U. S. R. Co. rubber floor covering. Arthur B. Fennell, general manager of tire sales, of New York, was a recent visitor to the Coast.

Dayton Rubber Manufacturing Co., Dayton, O., according to Pacific Coast Manager Joe P. Schiller, with headquarters in Los Angeles, scored a 400 per cent increase in January tire sales over those of the same month a year ago in the Coast territory. Mr. Schiller has just organized an extensive system of dealer outlets throughout the Northwest and has opened a new factory branch in Seattle to take care of the state of Washington.

Plant Rubber & Asbestos Works, San Francisco, has taken over the Southern Asbestos & Magnesia Co., of Los Angeles, the business of the latter to be continued under the old name, and with Sidney L. Plant of the San Francisco concern as president and Wilmer Bingord as vice president and general manager.

Firestone Nearly Ready

Firestone Tire & Rubber Co. of California will, unless all signs fail, have its Los Angeles factory in operation in June and about a month ahead of schedule, according to Vice President C. A. Myers, in charge of construction. The unusual speed in building operations has been made possible with the aid of the most modern labor saving machinery obtainable. Much time has been gained also through such large scale operations as the pouring in one job of the concrete for the floor of one section of the main building, 126 carloads of sand and gravel and 18 cars of cement being used. The structural steel for the process and curing department, covering two acres and containing all the heavy vulcanizing and other machinery, was up three weeks ago, and the weighty equipment has since been all installed. The mechanical building has been finished and furnished. The steel skeleton of the power house has just been erected, and work will soon be begun on the office building. Later tanks and other structures will be built to complete the very up-to-date tire plant on the 40-acre tract owned by the company at Manchester Ave. and Alameda St.

Guayule in Santa Maria Valley

American Rubber Producers, Inc., a subsidiary of the Intercontinental Rubber Co., has begun to set out guayule plants on 215 acres in the Santa Maria Valley, Calif., adjoining the 5-acre plot on which it started cultivation experimentally a year ago, and all of which is part of the big guayule enterprise at Salinas. An average of 7,260 plants to the acre are being put in with the special planting machine developed by the company's manager, J. M. Williams, and who is supervising the work at Santa Maria. The seedlings are set two feet apart and the rows three feet apart. The plants will be ready for harvesting and processing at a rubber extraction mill within four years.

Universal Rubber Mfg. Co., San Francisco, according to Manager C. M. Shannon, is working to full capacity on patented articles in its molded goods department for over a year; and, while sales in general lines are somewhat better than last year, there has been an especially large increase in specialty lines in hard rubber goods. Hose and belting continue to be made in all sizes and in good volume. The annual overhauling of mechanical equipment has just been finished. The compeny is officered by George M. Stevens, president; John J. Moore, vice president; John J. Filippini, secretary-treasurer, and C. F. Butte and D. T. Rogers, who are also directors.

California Rubber Products Corp. 1201 Merchants Exchange Bldg., San Francisco, Calif., has in operation a modern refinery for deresinating and refining balata. The plant is located in Redwood City. W. A. Cree is president; Sam Whiting, vice president; and H. J. Raynes, secretary.

Goodyear Tire & Rubber Co., Los Angeles, recently celebrated the production of 10,000,000 tires since the opening of the southwest factory on June 14, 1920. The mid-winter average of 7,500 tires daily has since been raised to over 10,000 a day, taxing every department and necessitating three shifts daily in employes. To provide for the increasing output, plans are being considered for a large addition to the factory in the near future. D. W. Sanford, recently manager in Portland, and formerly of El Paso, has been appointed Los Angeles branch manager, taking effect March 15.

Pacific Goodrich Making Tires

The first Silvertown cord tire to be manufactured at the new Pacific Goodrich Rubber Co.'s Los Angeles factory was produced on March 16. No unusual ceremony attended the opening of the big plant on the Union Pacific industrial tract at Whittier boulevard, Atlantic Ave. and Telegraph Rd. The making of the first tire marked the climax of an exceptional industrial engineering achievement which comprised the completion of a factory over a quarter of a mile long and 400 feet wide, with every detail and process efficiently functioning in the record time of seven months from the day when ground was first broken.

An official opening will be held at the new factory on May 2, when production machinery will be in full swing, turning out close to the initial capacity of the plant, 5,000 casings and 6,500 tubes daily and employing nearly 1,500 workmen. A special feature will be a radio programme put on over the Pacific Coast broadcasting network, and which will fit in with a similar dedicatory programme to be issued over the Midwest and Eastern networks.

Recent additions to the personnel from Akron are E. Baker, manager of the technical department; H. J. Hobman, employment manager; A. Kelly, chief chemist; J. A. Herbert, secretary, and G. W. Hubbell, cashier.

Curt Uschmann, chief of mechanical trades, Firestone Tire & Rubber Co., Akron, has been transferred to Los Angeles, where he will be master mechanic in charge of operation and maintenance at the new Firestone plant in the latter city. L. R. Jackson, general sales manager of the Firestone parent company in Akron, has been conferring during the past month with company officials and dealer organizations in the chief cities on the Coast on plans for the distribution of tires from the new Firestone factory in Los Angeles. Not only will the entire Coast be served from the latter works, but all the territory as far east as Billings, Denver, and El Paso. Warehouses will be maintained at Spokane, Tacoma, Reno, Stockton, Oakland, Fresno, El Paso, Phoenix, and San Diego. Park J. Patterson will be in charge of sales. He was formerly Chicago manager and had been personal assistant of President Harvey S. Firestone.

Dunlop Tire & Rubber Co., Buffalo, N. Y., has been establishing through Assistant General Sales Manager Arch Harp a score of branch warehouses in California, Oregon, Washington, and Arizona. The company now has factory branches in Los Angeles, Seattle, Portland, and San Francisco, with headquarters in the latter city and all supervised by Robert R. Fox, Pacific Coast division sales manager.

Marathon Tire & Rubber Co. has been improving its sales organization on the Coast through H. E. Waldsmith, one of the Akron factory executives.

The B. F. Goodrich Rubber Co.'s Los Angeles branch manager, F. L. Hockensmith, has been in New Mexico and western Texas recently arranging to take over for the Pacific Goodrich Co. territory heretofore served by the Goodrich branch in Dallas.

Samson Extends East and South

Samson Tire & Rubber Co., Los Angeles, reports a large increase of sales on the Pacific Coast and in the Midwest territory and also a marked growth in business in the Atlantic border field. In addition to the recently opened factory branches in Newark, N. J.; Atlanta, Ga., and Dallas, Tex., several others will be opened shortly in the South and Southeast. The company reports that its auxiliary tire factory, Plant No. 2, in San Diego is greatly relieving the overtaxed original plant in Compton, Calif., which has been repeatedly enlarged during the company's ten years' existence. The San Diego plant, which has an extensive equipment of up-to-date tire making machinery and facilities for large production, is already operating at 50 per cent capacity, although it was opened scarcely two months ago. At the main plant in Compton a 24-hour working schedule has been kept up for over four years. A report that the company is planning a chain of tire factories throughout the country is without foundation, the executives say, who also declare that in the case of the Samson concern it would be an uneconomic and unnecessary policy.

Midwest

Vogue Rubber Co., Chicago, Ill., of which Harry C. Hower is president, has announced the appointment of J. D. Driscoll as vice president. The factory at Laporte, Ind., is working on a twenty-four-hour day schedule to meet the demand for its product, according to the president.

Willard L. Morgan is establishing a new research laboratory at the United States Rubber Co. tire plant in Detroit, having been transferred from the company's general laboratories in New York City.

R. I. Wishnick, of Wishnick-Tumpeer, Inc., New York, N. Y., is supervising operations at the Lawrenceville, Ill., plant of the company.

J. H. Heist has been appointed district manager at Chicago, Ill., for The Dayton Rubber Mfg. Co., according to an announcement made by Vice President D. W. Warden. Mr. Heist was formerly director of sales for the Wheary Trunk Co.

Mountain States Rubber Co., Salt Lake City, Utah, reports sales and profits for 1927 in excess of any previous year. The company's business is principally with the large mines and smelters in the west where conditions are particularly favorable at this time. Mechanical rubber goods are the chief products, but tires are also sold. A practical mechanic and engineer has recently been installed to work in conjunction with the sales department of the concern.

The Midwest Rubber Reclaiming Co., a subsidiary of the Akron Rubber Reclaiming Co., has been organized with offices at St. Louis, Mo., and a plant at Monsanto Village, East St. Louis, Ill. The new plant is expected to have a reclaiming capacity of twenty-five tons daily. William Welch is president, S. G. Luther, vice president, and W. A. Hart, secretary and treasurer of the new company.

R. C. Hawley

J. H. Heist

Other important additions to the Dayton Chicago branch staff include R. C. Hawley, former sales manager for the Lincoln Products Co., who takes over the Michigan state territory, and C. L. Nyren, who will represent Dayton in Iowa.

O. E. Zook, secretary-treasurer of the Zook Tire Co., Pueblo, Colo., distributer of Dayton tires and tubes, spent several days at the Dayton factory consummating tire purchases, indicating a healthy condition in the Colorado territory.

General Tire & Rubber Co. of Akron, O., plans to build a $20,000 branch in Grand Rapids, Mich.

William Wieses has been placed in charge of the Indianapolis branch of the United States Rubber Co. He was formerly at the head of the Des Moines, Iowa, branch.

The Stedfast Rubber Co., Montello, Mass., has appointed Oscar F. Wright of Saint Louis as selling agent for its line in that district. A complete line of the "Stedfast products" will be carried in St. Louis.

L. E. (Red) Parkhurst, famous motorcycle speed demon, has joined the sales force of The Gates Rubber Co., Denver, Colo., and is selling fan belts, radiator hose and other Vulco products in the St. Louis district.

The Collette Tire & Rubber Co., Racine, Wis., has been organized to manufacture the Collette demountable cushion tire. J. L. Bitker is president; Guy M. Collette, vice president and general manager; and J. W. Bitker is secretary of the company.

The J. D. Strutzel Rubber Co., 1606 Collins St., Joliet, Ill., recently incorporated, is now in operation and reports sufficient orders on hand to operate in full capacity for the next six months. The factory has been equipped with presses, several mills, calenders, and power plant for the manufacture of rubber floor tiling. The officers of the company are: J. D. Strutzel, president, H. M. Strutzel, vice president, and Elizabeth Strutzel, secretary and treasurer.

Canada

Bookings of rubber footwear for the fall trade will soon take place now that the new price list has been issued. Salesmen will do a good business in the fancy lines of women's overshoes which have been so popular the past season. There is no doubt these shoes were a great stimulant to business last Christmas, and the trade will no doubt be anxious to give them a chance to repeat this success. It is predicted that next season fancy colored overshoes will be an inch or two higher than the present shoe and an inch or two lower than the standard high overshoe. They will, of course, have cuffs. It looks very much as though next season the trade in women's black overshoes will be largely confined to matrons. Taking it all through the manufacturers have to be complimented on the general appearance, new patterns shown, with improved fitting qualities of the new fall and winter rubber footwear.

Wholesalers are making shipments of rubber garden hose now, and much of this spring merchandise is being taken by dealers all over the Dominion. Prices remain unchanged from those set at the start of the booking season.

We understand that rubber goods manufacturers in invoicing mechanical rubber goods are taking one per cent off the face of the invoice to take care of the reduction in sales tax where the tax is included in the price. This avoids the necessity of making out a full list of new prices at present.

Canadian Goodrich Co., Ltd., reports great success with a Fit-All type of rubber for men, which is formed on a combination last and adaptable to many styles and widths of shoes. A similar rubber is being made for women. An addition to the Hi-Press line of footwear this year is an extremely light rubber called the "Fairy."

The Eden Hockey Trophy, a massive and handsome piece of silverware which is played for annually by the various units of the Dominion Rubber Co., Ltd., was this year carried off by the hockey team of the Columbus Rubber Co. of Montreal, Ltd.

Woodstock Rubber Co., Ltd. President A. F. Dwyer announces that this new rubber manufacturing concern located at Woodstock, Ontario, will offer about June 1 a standard line of rubber footwear to the Canadian trade.

Lorne A. Hutchison has recently been appointed to take charge of the head office sales department of the Independent Rubber Co., Ltd., with headquarters in Montreal. Mr. Hutchison was formerly associated with the Dominion Rubber Co., Ltd., and the Columbus Rubber Co. of Montreal, Ltd.

Charles H. Roper has been made factory manager of the Gutta Percha & Rubber Co., Toronto, Canada. In our issue of March, it was inadvertently stated that Mr. Roper had made a connection with the Endicott Johnson Co.

John Myles, of the Columbus Rubber Co. of Montreal, Ltd., was recently in the Maritime Provinces on a business trip.

Gordon H. Nickle, sales manager of the Columbus Rubber Co. of Montreal, Ltd., has returned to headquarters after visiting customers in Eastern and a portion of Northern Ontario.

C. H. Carlisle, president and managing director of the Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ontario, recently tendered a dinner at the King Edward Hotel, Toronto, to D. J. McCarthy and J. G. Lane, as a mark of their fifteen years' service with the company. Mr. McCarthy is assistant general sales manager of the company, and Mr. Lane is treasurer and assistant to the president.

Col. Paul R. Hanson, manager of the Montreal branch of the Dunlop Tire & Rubber Goods Co., Ltd., was recently elected president of the Royal Automobile Club of Canada, Montreal.

Miner Rubber Co., Ltd., recently held a salesmen's convention under the chairmanship of T. Y. O'Neill, sales manager at the head office in Granby, Quebec. Fifty members of the sales staff exchanged ideas and discussed business problems.

Canadian Export Club of Hamilton, Ontario, was recently formed, and on the Executive Committee appears the name of F. L. Freudeman of the Sterling Rubber Co., Ltd., Guelph, Ontario.

Dominion Rubber Co., Ltd., is utilizing large advertising space in the leading newspapers throughout the Dominion featuring "Gaytees." The copy is most impressive and the illustrations will surely sell the goods.

Goodyear Tire & Rubber Co. of Canada, Ltd. President and Managing Director C. H. Carlisle states that all three plants are running to forced capacity and notwithstanding the company is oversold on production. The improvement in business is attributed to the larger plant capacity of the company. A recent addition to the repair materials line-up is a ½-inch cushion gum strip. The stock is 1/32-inch gage, holland backed, and is packed 14 rolls in a two-pound can.

Quebec Rubber Co., Ltd., Quebec City. Tenders are being called under the Bankruptcy Act for the sale en bloc of all the assets of this company. Pending the receiving of the tenders the operations will be carried on by the trustees under the authority of the inspectors.

Canada Is Fourth Fabricator of Rubber. Speaking at the annual banquet of the Canadian Rubber Association held in Montreal recently, the Hon. James Malcolm, Minister of Trade and Commerce, declared that Canada has become the fourth rubber manufacturing country of the world and was now exporting rubber products to the value of $30,000,000 annually. Although there are but 25 plants engaged in this industry the production is $100,000,000 annually.

A Dutch Selling Pool

According to local press reports, while J. N. Burger of the Ambaloetoe Rubber Co., well-known Dutch rubber man, did not participate in earlier discussions on the desirability of a sales organization, he seems to be taking an active part now. He appears to be trying to put over an old scheme of his, namely, the formation of a sellers' pool, into which a part of the producers' output would be brought. In his opinion, the output must remain free, the pool regulating the sale of its rubber according to market conditions. Of course, any gains made would be on that part of the producers' output not under the control of the pool. Such a pool might serve as a trial measure in the direction of combined selling and would not immediately bind producers to a complicated and perhaps costly sales organization.

Mr. Burger has instituted personal inquiry among producing companies to ascertain the attitude of company heads toward a proposition of the kind described above. As a result of this inquiry, a meeting of Dutch rubber producers was held at the Hague on March 1, but no definite course of action was decided upon. A majority endorsed the principle of mutual cooperation and definitely rejected the idea of any appeal to the Netherlands or East Indies Governments. The chief result of the meeting was the adoption, by a large majority, of a resolution to appoint a committee of seven, to care for the interests of Dutch rubber producers.

The committee is composed of: J. N. Burger, managing director of the Ambaloetoe Rubber Mij.; E. Enthoven, managing director, Deli Mij.; P. Van Leeuwen Boomkamp, managing director, Rubber Cultuur Mij., Amsterdam; W. C. Loudon, managing director, Tiedeman & van Kerchem; M. Sanders, managing director, Kendeng Lemboe; Th. G. H. Stibbe, managing director, Internationale Crediet & Handelsvereeniging, Rotterdam; E. H. de Vries, managing director, Deli Batavia Rubber Mij.; S. C. Knappert, secretary.

A later report states that the Committee of Dutch Rubber Producers will meet on March 21 to further consider the formation of a seller's pool.

From a number of interviews with prominent rubber men in Holland, recently published by the leading Dutch papers, it appears that on the whole, opinion is in favor of some form of selling combine which is considered necessary to remedy the situation where a large number of individual sellers is confronted by a powerful and united group of buyers. But it is repeatedly pointed out by different spokesmen that the success of even a selling combine hinges largely on what can be done in the matter of native producers, who are in a position to throw large quantities of rubber on the open market at comparatively low prices. As for any kind of restriction of output, this, it is considered, is doomed to failure for the same reason, that native rubber would nullify any such attempt. Apart from this, however, the majority of Dutch planters wish to have their outputs free.

The Rubber Industry in Europe

Great Britain

British rubber producers have just had a very good sample of what they must expect when they allow the government to handle their affairs. The crude rubber market was thrown into a panic by Premier Baldwin's sudden announcement—made without previous consultation with any of the bodies most interested in the welfare of the rubber industry: The Rubber Growers' Association, The Rubber Traders' Association or the Colonial Office Committee—that the Committee of Civil Research has been asked by the Prime Minister to consider the rubber restriction scheme and report confidentially as to whether it should be retained in its present form, modified or removed altogether. The wording of the announcement, permitting the interpretation that there was a possibility that restriction might be removed as suddenly as it was enforced, produced just that amount of uneasiness among those holders who are forever fearing the worst, that gave the "bears" an opportunity they were not slow to utilize to the full.

Government Criticized

The government action has been strongly criticized on all sides. At the annual meeting of the United Serdang Rubber Plantations, Eric Miller, the chairman, said that in view of previous government statements, the latest made in the beginning of February, 1928, the rubber industry had a right to believe that no changes would be made during the year ending October 31, 1928, and that the recent government announcement fell like a bombshell on the market without one word of explanation or justification. The inquiry, he further said, would be welcomed provided the committee discharged its task in a practical way and with a full appreciation of the importance of the rubber industry. No clearer indication, he added, of what would happen if restriction were removed prematurely could be imagined than the outstanding events which have taken place in the last few days.

Symington & Sinclair ascribe to the Premier's blunder an actual financial loss on crude rubber alone amounting to about £16,800,000. They also draw attention to the danger of a large part of the control of rubber growing passing out of British hands. During the last few weeks, they state, large American interests have been steadily picking up shares in British rubber producing companies on the London Stock Exchange.

A statement by the Rubber Growers' Association and a letter by the Rubber Traders' Association, indicate that the majority of voices find fault not so much with the fact that an inquiry is to take place, but with the manner in which the announcement was sprung on the totally unprepared industry.

Opinion in the East

Cables from Malaya show that on the whole, opinion among the European planters is in favor of retaining restrictions, though it is considered desirable to lower the pivotal price and to fix standard production at a figure bearing some relation to the actual capacity of the colony to produce rubber. A powerful minority is thoroughly disgusted with the whole scheme and would prefer a fight to the finish with the Dutch.

The Chinese seem to be in favor of removal of restriction if the Dutch do not cooperate.

From Ceylon, on the other hand, has come a resolution asking for the abolishment of restriction.

Dutch Cooperation

Meanwhile, the upheaval has had the effect here of once more bringing discussion of the merits and demerits of restriction to the fore. Prorestrictionists, casting around for the cause or the failure of the scheme to function properly, naturally light on the Dutch, and just as naturally they want a change in the attitude of these canny people. It is an illuminating study in psychology to note the various methods of approaching the matter advocated by the different writers. The tone is frequently bitter and a strong desire to compel Dutch cooperation by adopting a threatening attitude seems to predominate.

As for the Dutch, the continued drop in prices during the last few weeks has revived the wish among a number of important producers to cooperate with the British. Discussions in this connection have been rather frequent of late but nothing definite has been decided on as yet. One thing is clear; the majority of Dutch concerns will have nothing to do with government intervention and would not consider cooperating with the British in a scheme of restriction, or in any scheme which would give the respective governments a hand in their affairs. Some kind of selling combine or producers' pool seems to be preferred.

British Industries Fair

The Fourteenth British Industries' Fair, which terminated on March 2, is generally considered to have been one of the most successful business exhibitions ever held in Great Britain. It opened at the White City, London, and Castle Bromwich, Birmingham, with displays by two thousand British manufacturers, among whom were many well-known makers of rubber goods and machinery. Some of the noteworthy exhibits connected with rubber at the White City, London, will be briefly mentioned here.

Sporting goods formed the main attraction at the stand of the Avon India Rubber Co., Ltd., London, besides a number of novelties such as flower bowls, bath and table mats, egg cups, and other rubber novelties.

The Dunlop Associated Companies had exhibits in three sections in London—textiles, sporting goods and toys—which included the new Prinsuede sports coat, made of a soft suede, waterproofed, and put out in a number of attractive styles; the Delashield rubber gaiter with lightning fastener, which has found favor with three queens—Queen Mary, the Queen of Belgium and the Queen of Spain; a balloon for use at carnivals and parties, designed when inflated to simulate in shape and decorations a Chinese lantern; and finally a miniature Wimbledon tennis set intended for gardens too small for an ordinary court.

The North British Rubber Co., Ltd., London, directed special attention to its lines of footwear, particularly the "Pluvia," a smart over-boot for women made of black or delicately colored rubber, with convertible fancy collar of soft suede cloth. These over-boots can be slipped on over walking or evening shoes, and the collar can be turned up for greater protection, when the shape is that of an ordinary wellington. They have also put on the market a three-quarter boot for children. These have a soft, rubberized fabric extension that comes over the knee and can be tightened with straps and buckles. These boots, known as the "Hyandry" boots, have attained instant popularity.

A particularly attractive stand was that of the Reliance Rubber Co., Ltd., London, gay with a large variety of beautifully designed and colorful articles. There were pure rubber bathing caps in lustrous metallic colors, well made seamless hot water bottles in a wide range of colors, designs and sizes—the "Baby de Luxe" for instance will fit into a lady's handbag, besides a very effective display of proofed aprons, caps, overalls, sponge bags, air cushions, covers for tennis rackets, etc.

The Birmingham section was devoted chiefly to mechanical goods, the central feature being the exhibit of the Rubber Growers' Association to which forty manufacturers contributed. Fine examples of rubber flooring, besides belting, hose, packing, molded ebonite fittings for chemical and electrical purposes, rubber clothing, footwear, gloves for industrial purposes, and the Major Evans coat which, interlined with foam rubber and only weighing 2½ pounds, will support about 252 pounds weight in water, were among the articles displayed. In addition there were the new rubber drive belts for motor cycles and cycle cars, which consist of

rubber blocks that are in compression in practically every radial direction and through their action prevent the belt from slipping or creeping even in the wettest weather.

Various types of cables for power and lighting purposes were shown by the Cable Makers' Association; other displays of cables were by Callenders' Cable & Construction Co., Ltd. (rubber-insulated cables of every description), and the Macintosh Cable Co., Ltd., London (Maconite and rubber specialties, cable accessories).

Hydraulic presses and pumps for different purposes were shown by Hollings & Guest, Ltd., and waterproof garments in various styles and materials, besides rubberized piece goods in different patterns for a multitude of uses, by P. Frankenstein & Sons, Ltd., Manchester.

Ormsby-Gore's Mission

Ormsby-Gore, M. P., has been requested by the Secretary for the Colonies to pay a short visit to Malaya to report on scientific and economic developments. He will be accompanied by G. H. Creasy, of the Colonial Office, and by E. M. H. Lloyd, secretary of the Research Grants Committee of the Empire Marketing Board. He hopes to pay a short visit to the scientific and research stations at Buitenzorg, Java, and on his return journey will spend two weeks in Ceylon to visit the Agricultural Research stations there. Mr. Ormsby-Gore is expected to leave England on March 15 and will probably be back in the first week of July.

While rubber is not mentioned in this announcement, it is interesting to note that the visit to the three rubber-producing centers coincides with the inquiry of the Civil Research Committee into the rubber restriction scheme.

Firestone Factory in England

It is understood that the Firestone Tire & Rubber Co. has acquired a large site on the new Great West Road, near Brentford, Middlesex, and work on the building is to start immediately. It is learned that outside of a few workers from the United States who will be employed here at the start, only British labor will be employed. The factory is expected to give work to several hundred persons.

Rumania

The most popular reducing garments in Rumania are the combination bust and hip reducers imported from France and Germany, the best known being "La Deesse," manufactured by Dr. Monteuil, Paris, and the brands recently introduced by the German firm of Muller, Leipzig.

Czecho-Slovakia

We have been informed that the firm of Gottfried Weltsch's Nachfolger, Prague, has obtained the sole selling rights of the products of the Russian Rubber Trust for Czecho-Slovakia, Germany, Austria, Hungary, Italy, Jugoslavia, Rumania and Bulgaria.

Germany

Latest statistics regarding Germany's imports and exports of crude and manufactured rubber amply reflect the increasing home consumption of rubber goods. On the one hand we find a considerable increase in the imports of raw materials, the figures for crude rubber having been 425,638 quintals in 1927 against 250,391 quintals in 1926. Gutta percha imports dropped from 3,594 quintals in 1926 to 1,842 quintals last year, but balata shipments rose from 3,825 quintals to 6,881 quintals, while the increased consumption of waste and old rubber, gutta percha and balata was still more marked, the figures having been 34,378 quintals and 80,490 quintals in 1926 and 1927 respectively.

In respect to manufactured goods, on the other hand, in most instances imports have risen, while export figures of several items show a reduction, which at once illustrates the growing home demand mentioned above and what is less satisfactory to German manufacturers, the greater foothold that foreign goods are establishing for themselves in Germany and the difficulty that German goods experience in maintaining their ground abroad.

Growing Imports, Declining Exports

Take the most important items on the list of exports and imports—tires and tubes. Inner tubes for motor vehicles, from foreign sources, chiefly Belgium and the United States, numbered 218,724 in 1927 against 125,765 in 1926, while the number of German tubes exported fell from 198,951 in 1926 to 174,532 in 1927. Similarly imports of casings for motor vehicles rose to 352,293 from 223,392, but exports showed a reduction from 208,618 to 154,055. Again American and Belgium led as suppliers, but whereas in 1926 America's share was only 75 per cent of Belgium's, American shipments were almost double those of Belgium in 1927 (America 181,868 casings, Belgium 95,201), and over half the total German imports of casings for that year.

For the considerable increase in imports of casings for bicycles from 28,592 in 1926 to 349,523 in 1927, Belgium was chiefly responsible, her deliveries totaling 270,217 last year. Exports of these goods showed a slight rise, from 833,194 to 884,268. Imports of bicycle tubes jumped from 56,751 to 121,422, while exports, which had been 2,414,960 in 1926 came to 2,641,713.

Foreign business in rubber footwear showed a decline all around, imports dropping from 746 quintals to 613 quintals and exports from 3,446 quintals to 2,539 quintals. On the other hand, the trade in belting, hose and packing seems to have been more active last year as imports show totals of 2,146 quintals instead of 956 quintals, and exports were 23,812 instead of 20,844 quintals. The same is true of goods of combined rubber and fabric, imports of which were 2,572 against 1,392 quintals, and exports 17,109 quintals against 14,412 quintals.

The increase in imports was noted in the case of hard rubber goods which in 1927 were 1,841 against 862 quintals, a rise which the higher figure for exports covers.

Tire Prices Cut

As reported last month, the German Association of Tire Factories has decided on a cut in the prices of tires ranging from 3 to 15 per cent, the reduction to be effective from January 2, 1928. Bicycle inner tubes have been reduced 10 per cent.

While consumers will undoubtedly be pleased with the new prices, it is questionable whether the cuts are in the best interests of the German tire industry. To be sure the action seems justifiable in view of the fact that competition in Germany from abroad, notably Belgium, America and France is keen. Belgium and America in particular, seem to have wrested a good deal of local business from the hands of German tire manufacturers. German business abroad is severely handicapped by the new tariffs that foreign countries have introduced. The best example is that of England which recently put an import duty on all foreign tires and tubes amounting to 33⅓ per cent. Several large German firms, the Continental and Peters Union, for instance, had branches there for the purpose of selling their tires and these firms have been hard hit by the English measure.

But, however, true all this may be, it is also a fact that tire manufacturers have not been doing a very brilliant business of late and that recent business reports have not all been equally encouraging by any means, so that the principal question is, how long will the German manufacturers be able to stand the new prices.

Sweden

Preliminary figures for the exports and imports of rubber and rubber manufactures for Sweden during the year 1927 indicate increased activity in the rubber industry during the year. Not only did the imports of crude rubber increase from 2,160,232 kilos in 1926 to 2,258,481 kilos in 1927, but imports of manufactured goods as well as exports went up. Thus footwear imports were 204,767 kilos instead of 191,718 kilos, and the totals for all other rubber manufactures imported were 3,702,107 kilos against 3,188,225 kilos. Rubberized articles for wear came to 198,696 kilos as compared with 185,936 kilos the year before.

As already indicated, exports also increased—old and waste rubber from 267,229 kilos to 449,212 kilos and rubber footwear from 630,172 kilos to 756,401 kilos.

Ian D. Patterson, formerly research chemist with the Goodyear Tire & Rubber Co., Akron, O., is now chief chemist at the Goodyear plant in Wolverhampton, England.

The Rubber Industry in the Far East

Malaya

Foe of Restriction

Malaya has been having quite a hectic time of it lately. First there was Mr. Robinson of the Lunas Rubber Estates, who took it upon himself to speak in plain terms about restriction. He is one of those who, being connected with a well organized and paying estate, cannot see the necessity for his company to suffer the consequences of reduced output because there are a number of others who apparently could not get along if government were not there to bolster them up with a Stevenson Scheme. And he said as much. He declared that it was time that the industry learned to stand on its own feet and those too weak to do so, must take the consequences.

Mr. Robinson happens to be a member of the Legislative Council of the Federated Malay States and so his remarks brought all the pro-restriction guns out in force against him, and the local papers have printed pages of criticism regarding his frank views on the subject.

J. S. M. Rennie of the Rennie Lowick firm of secretaries and agents for rubber companies was one of those who replied to Mr. Robinson's statements. Mr. Rennie is not exactly in favor of restriction believing it served its purpose to begin with, but now a different form of control is necessary, but until this has been found restriction should not be taken off. Mr. Rennie feels that the issue is whether the industry is to stay in European hands or whether it is to fall into the hands of the native producers. In view of the fact that British capital has furnished about £200,000,000 in cash, he is of opinion that for the next fifty to a hundred years the industry must be retained as a white man's monopoly, and so control is necessary.

His idea of control is a scheme of amalgamation or combination of British-owned companies and proprietary planters, and that the Dutch planters and American manufacturer estate owners be invited to join and put in their estates. He thinks it possible to induce owners of 3,000,000 acres to join in a combine which could contract for yearly deliveries to leading manufacturers at prices satisfactory to all parties. Native areas would simply be dealt with by buying up the output or selling to small manufacturers. In his opinion, it will not be long before all the rubber produced will be required. There is the interesting proviso added, that the respective governments should restrict alienation of land for rubber to the combine.

Restriction Inquiry

The attack on Mr. Robinson was still in full swing, when suddenly, out of a clear sky, came the announcement regarding the inquiry into restriction to be carried out by the Committee for Civil Research. The market, already nervous, slumped heavily, and great excitement prevailed all around. Prices were expected to fall still lower and sellers, fearing that restriction is to be abandoned, rushed to get rid of their stocks. Producers are being advised to keep as much rubber off the market as possible, but with the present panicky feeling dominating most minds, there is not much likelihood that the advice will be very closely followed by this producing concern.

Pro-restrictionists point out that the fact that the mere thought that restriction might be removed has such results is more than ample proof of the need for it. To the outsider, the demonstration would sooner prove that despite the fact that the majority of producers have been put on their legs by restriction there are far too many concerns whose condition is fundamentally unsound so that the very idea that with the removal of restriction prices might fall, is sufficient to make them rush head over heels to turn their holdings into cash while there is still a chance to do so. Such action, is fraught with danger to both the weak and the strong, so that one is inclined to sympathize with the views of people like Mr. Robinson.

There is another point. In any form of control, this timid and easily excitable element which seems to be quite large, would at critical times do all in its power either to openly break control or to evade its provisions by underhand means.

Wilkinson Process

The report of the Wilkinson Process Rubber Co., Ltd., for the period ended September 30, 1927, shows a loss of $54,458.47. The company's factory was opened at the beginning of April, 1927, so that the report covers six months' working. Progress with the buildings necessary for manufacturing 50 tons of process rubber per month is stated to be satisfactory. The main product, Linatex, is finding increasing favor, though during the period covered by the report, overhead charges were comparatively heavy due to the initial period of small output, which made the cost of production high, but as the output increases, the costs will fall rapidly and a good margin of profit is expected. The directors propose a further issue of capital amounting to $350,000 to complete among others, the building program. This will bring the capital of the company to $2,000,000.

An experiment on a small scale is being carried out on the Federated Malay States Railways with a slab of rubber made by the Wilkinson process, laid between rail and sleeper. This is said to reduce considerably vibration and wear and tear, as well as substantially to lengthen the life of the sleeper. So far the experiment seems to be giving satisfaction, and if an extended trial continues to be as successful, there is opened up the possibility for the use of a large quantity of rubber, as three tons are required for each mile of railway treated.

Ceylon

Premier Baldwin's announcement regarding the inquiry into restriction by the Committee of Civil Research has taken Ceylon completely by surprise. But it is to be noted that there is practically none of that severe criticism that characterized the reception of the news elsewhere. If anything, it is felt that the Premier should have set such an inquiry afoot sooner. Ceylon, of course, has never wholeheartedly sponsored restriction, and while it is admitted that the removal of restriction would undoubtedly result in a sharp decline in prices at first, the prospect of the removal of the measure would on the whole be greeted with relief, provided, naturally, that reasonable notice were given in advance.

People are tired of the methods of the Colonial office. In addition there is quite a lot of feeling against the way in which restriction has so largely been evaded by Malaya. The reports of the extent of smuggling and of over-assessment have not helped to make restriction more acceptable here. There is another important consideration, and that is that rubber is not Ceylon's chief crop as is the case in Malaya. To be sure there are in all some 400,000 acres of land devoted to rubber, but of the total output of rubber only 60 per cent comes from European owned properties, the rest being in the hands of Singhalese, and the latter have never been partial to restriction.

Sir Edward Rosling arrived here recently and has been trying to work up favor on the subject of tightening restriction, but on the whole has met with very little success.

DEPARTMENT OF COMMERCE FIGURES show that American automobile casings dominate the market in Panama City. An increase in sales during 1928 is expected because of the completion of road work in the Provinces of Panama, Los Santos, Cocle, Veraguas and Herrera.

Netherlands East Indies

Native Rubber

In consideration of the fact that despite official publications regarding the probable output of native rubber in the future, dealers and producers continue to ignore this product in their estimates of the future position of rubber, the Department of Agricultural Economics issues a communication in which the main facts to be considered in native rubber are once more reviewed with the idea of warning Europeans interested in the rubber industry against too great optimism in the matter.

As there are no figures available regarding the area, the probable extent of native cultivations can only be estimated. On the basis of the productive capacity—roughly 95,000 tons dry for the year—it is thought that there must be some 95,000,000 trees on native holdings. The average number of trees planted per hectare comes to 800, but owing to this close planting, it is figured that about 25 per cent of the trees become unfit for tapping so that the average number of trees in bearing per acre is put at 600 per hectare, from which it is deduced that the present mature area is about 160,000 hectares.

From personal observation and numerous reports received, it is known that the total planted area is three or four times as great as the productive area, so that the total extent of the native holdings is estimated to be about 500,000 to 600,000 hectares. (Hectare equals about 2.45 acres.)

A native rubber garden is tapped when the trees are four to five years old, so that the area planted in 1916-1920 came into bearing between the middle of 1920 and the middle of 1924. Owing to the low prices prevailing after 1920, comparatively little new planting was undertaken until about the middle of 1923. The extensions that were made after that date will begin to yield from 1928, so that within the next four or five years the exisiting area will be increased three or four-fold. However, owing to the labor factor, the increase in output will not be in proportion to the increased productive area.

Labor and Tapping

For the present, the situation in the two main native rubber centers in Sumatra as far as labor is concerned, is as follows: Palembang still has enough tappers available to tap the entire mature area, and it is estimated that the share of rubber falling to the coolie comes to about 0.7 kilos per working day.

In Djambi there is a shortage of tappers so that the entire area cannot be tapped daily and an irregular system of periodical tapping is in vogue. Owing to this circumstance, the tapper is able to bring in more latex at a time so that in the end his share averages 1.05 to 1.225 kilos per tapping day, in other words, considerably more than is the case in Palembang.

Labor No Check to Output

As far as these two centers are concerned—and they may be taken as examples for the other districts in the Dutch possessions—it therefore becomes apparent that while labor may limit the rate of increase, it will not actually check it. In the centers where labor is adequate, production will increase to the limit of the labor market, after which a system of periodical tapping will be introduced here too and it will be possible to obtain very much greater outputs with the same amount of tappers. In those districts where periodical tapping is already resorted to, the system will be improved, and as naturally the tappers will gravitate towards the most productive gardens even in these districts an increase may be looked for. As a result of all this it is considered not impossible that eventually an annual output of 200,000 tons of dry rubber will come to the market from native sources, while it is reasonable to assume that with prices at the present level, yields will come to 150,000-175,000 tons of dry rubber within the next five years.

Effect of Price

The effect of price on the output is not easy to determine. This much is clear, in times of financial stringency, the native will work for less pay and it will therefore pay to continue tapping at a low price level; on the other hand, when money conditions are easy, wages naturally go up and the price level moves up too. This is best illustrated by the fact that during the slump in 1922, tapping continued unabated although the price of standard was only 7 pence per pound; on the other hand, in 1926 when there was a deluge of money, work was partially stopped although the price for standard was 1 shilling, 8 pence.

Periodical tapping has ushered in a new era for native rubber, one in which it finds itself in a more favorable condition than ever. And for this reason it is contended that all those interested in rubber should continue to observe carefully the development of this source of supply and not judge it too lightly.

Tapping Budgrafts

In a recent issue of the *Archief voor de Rubbercultuur*, Holder and Heusser report on some tapping results obtained with buddings and seedlings on the Boekit Maradja Estate (Sumatra).

The buddings were made in October, 1922, the material used being obtained from the A. V. R. O. S. (General Association of Rubber Planters East Coast Sumatra). Nothing was known of the value of the clones and they were chosen chiefly on the basis of data concerning the mother trees. At the same time, a plantation of seedlings planted from seed obtained from the best trees on the estate was laid out, so that the buddings and the seedlings may be considered to be about the same age.

Experimental tapping began in July, 1926, when the trees were 3¼ years old. Two hundred buddings were taken from each of seven different clones—in all 1,400 buddings—and 200 seedlings. The trees of each clone were divided into two groups of hundred trees each and each group tapped on alternate months with a cut over half the circumference every day.

The average yield from all the clones together is 2¼ times as high as that for the seedlings. Clones 152, 80, 163, and the newly approved clone 71 gave yields above the average. The average yield per tree per tapping was 3.75 grams for the seedlings and for the best clone (152), 12.76. The average for clone 80 was 9.33, for 71, 10.03, for 163, 8.80 grams. The average for the poorest clone (as far as output was concerned) was 4.73 grams. This same clone, however, had the highest average girth among the buddings—58.9 c. m. as compared with 63.3 c. m. for the seedlings.

Concerning the individual clones, it is interesting to note that although 80 is a good producer and shows good bark renewal, it is more susceptible to pink disease than the other clones. Though the mother tree of clone 51 was and is still one of the best yielders on Mahanda Estate, the clone gives indifferent yields, although this seems to be improving. Clone 152 is the best producing and 71 is also good, although both clones have a tendency to branch low, necessitating pruning. Clone 76 is poor and 174 very mediocre.

African Rubber

Rubber from the French African possessions is brought to Bordeaux for sale instead of being shipped direct to foreign markets. With the cooperation of rubber collecting organizations and of the French Government authorities in Africa, Bordeaux traders have established inspection over the raw product as shipped to France.

Sales of African rubber at Bordeaux during the last three years were as follows: 2,001 long tons in 1925; 2,396 in 1926; 2,428 in 1927. The chief sources are: French Congo—956, 916, 1,205 long tons in the above three years respectively; Conakry, Rio Nunez, etc.—396, 389, 289, long tons respectively; Ivory Coast—176, 248, 191, long tons; and Cameroon—364, 709, and 630 long tons.

Besides these amounts, there were also sold plantation smoked sheets from the Cameroon totaling in 1926, 38 long tons and in 1927, 46 long tons.

Rubber Patents, Trade Marks and Designs

Machinery Patents

United States

1,658,894. CURVED TUBE VULCANIZER. Curved mandrels carrying inner tubes are supported, one within another, on lugs which hold the mandrels practically concentric with each other. Thus supported on the vulcanizing truck double the usual number of circular inner tubes can be cured at one time in the heater.—R. W. Hainer, assignor to The Goodyear Tire & Rubber Co., Akron, O.

1,659,453. FABRIC CUTTER. This machine cuts tubular fabric into bias strips. It overcomes the tendency of loosely woven or soft fabrics to wrinkle and clog the cutter by providing for locally smoothing the fabric just before it reaches the cutting means toward which it progresses spirally.—W. Berry, assignor to Joseph Bancroft & Sons Co., both of Wilmington, Del.

1,659,577. DISTRIBUTER OF POWDERED MATERIAL. An electrically operated bucket wheel, receives a feed of powdered material through a chute and fills its casing with dust. This is carried out of the casing by an inrushing current of air induced by an exhaust fan located at the center of the dust casing. From this point the powder escapes under regulation to insure an adequate and even supply from the distributing machine to a tubing machine.—V. Royle, Paterson, N. J.

1,660,204. RUBBER IMPREGNATED PAPER. The process of impregnation as illustrated diagramatically provides for the passage of the paper through a bath of rubber containing latex, compressing the paper through rollers and drying it in festoons before finally winding the treated paper into a roll. Provision is also made to rub or stretch the paper to increase its tear resisting strength.—K. L. Moses, Brookline, Mass.

1,660,343. TAPERING TUBE ENDS. A taper is desired at the ends of inner tubes to insure a smooth joint when the tube is made endless. Also it is desirable to exert pressure on the tube ends to prevent the entrance of fluid pressure between tube and mandrel during curing. These results are secured by means of a flexible band of metal made in cross section like a wide-spreading V with the apex facing inwardly. The ends of the ring overlap and are provided with clamping means to constrict the ring upon the tube. In this way the soft rubber tapers under the pressure by the ring.—C. E. Lowe, East Cleveland, O.

1,661,069. MAKING RUBBER STRIPS. This apparatus is in the form of a special die for an extruding machine adapted to extrude a number of strips in such proximity to each other as to cause them to come progressively into contact as the rubber swells upon emerging from the die. They are thus lightly joined for mutual support against distortion, yet they are ready separable subsequent to vulcanization.—F. P. Hartung, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,661,417. DRILLING BATTERY JAR VENT CAPS. This machine is designed for propelling a succession of vent caps past a drilling position and a baffle-mounting position all timed for mounting baffle members in the successive caps at their proper positions.—B. A. Evans and W. H. Slabaugh, Cuyahoga Falls, O., assignors to The B. F. Goodrich Co., New York, N. Y.

1,661,860. GOLF BALL WINDING MACHINES. This invention provides an electrically operated attachment or switch connected to a tripping mechanism on a ball-winding machine that is actuated and stops the machine when the ball is wound to a predetermined diameter when the winding thread is broken.—E. G. Templeton, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,661,888. MEANS FOR CONTINUOUS VULCANIZER. This comprises a closed liquid circulating system. The movement of the liquid carries the rubber strip along through the curing chamber and at the same time serves as the medium of heat transfer from the steam or hot oil outside jacket to effect cure. The liquid used in the closed circulating system is preferably some material which will be liquid at vulcanizing temperatures without boiling such as glycerine or low melting point metal. The forced circulation of liquid is sufficiently strong so that the surface friction exerted on the rubber strip or tubing will carry it through the pipe as fast as it comes from the extruding machine.—G. F. Fisher, Roselle, N. J.

1,661,893. GOLF BALL WINDING MACHINE. This machine is designed to wind rubber thread on golf-ball centers in a way to produce a spheroidal ball, consistently avoid the formation of zones of excessive thickness and provide a true criss-cross or ramble winding as distinguished from a rosebud or polar winding.—J. P. Griggs, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,662,019. HEEL WASHER DISTRIBUTER. This machine omits the usual spring controlled elements, is rugged in consequence and effects the distribution and application of the washers to the mold pins by magnetic force.—L. Wetmore, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,658,852. TIRE TRIMMER. V. V. Messer, Douglaston, N. Y., assignor to The Goodyear Tire & Rubber Co., Akron, O.

1,659,012. TIRE TOOL. J. Wallace, St. Louis, Mo.

1,659,159. WRAPPING MACHINE CUTTER. G. W. Prouty, assignor to Terkelsen Machine Co., both of Boston, Mass.

1,659,497. TIRE REPAIRING APPARATUS. C. O. Parkhurst, Delevan, Ill.

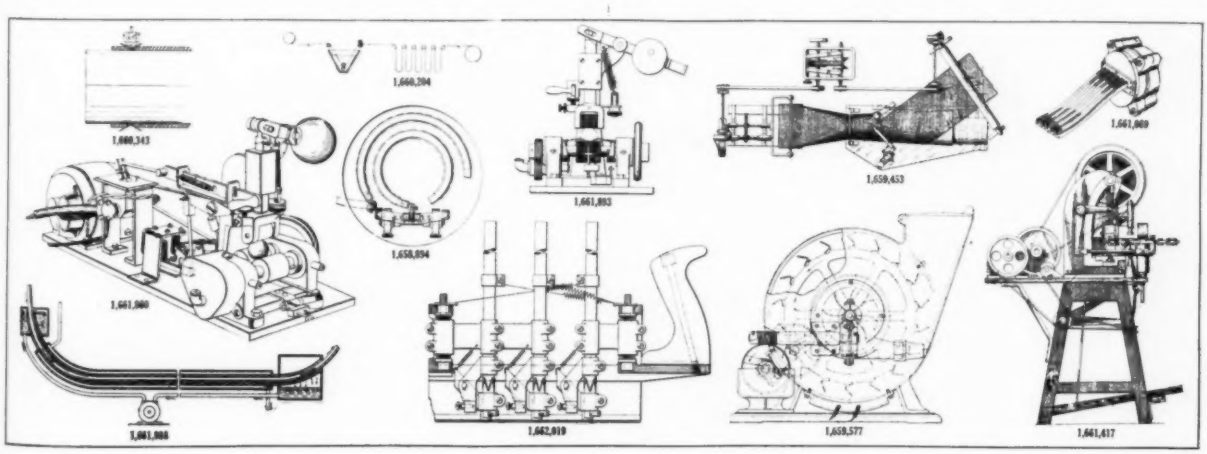
1,659,583. TIRE BUILDING MACHINE. G. F. Wikle, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,659,634 and 1,659,635. TIRE BUILDING APPARATUS. F. G. Neal, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,659,972. TUBE TESTER. F. E. Gilbreath and W. E. Wing, Luray, Kans.

1,660,602. WRAPPING APPARATUS. G. Duvoisin and O. Thiry, Paris, France.

1,660,653. MOLD. E. Nestler, assignor to Nestler Rubber Fusing Co., Inc. both of New York, N. Y.



Rubber Patents, Trade Marks and Designs

1,660,881. VULCANIZER. F. Nielsen, Epping, near Sydney, New South Wales, Australia.

1,661,090. APPARATUS FOR APPLYING STRIP MATERIAL. W. F. Rennie, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,661,184. TUBULAR FABRIC MACHINE. C. Kmentt, Youngstown, O.

1,661,252. GAS CONTROL. R. Fricke, Liepzig-Kleinzschocher and H. Mross, Pretzsch-on-the-Elbe, Germany.

1,661,449. TIRE BUILDER. J. D. Tew, Hudson, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,661,721. GRINDER. C. E. Gardner, Gloucester, England.

1,662,004. BEAD SETTING DEVICE. R. E. Jenkinson, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,662,016. TIRE BUILDER. J. A. Shively, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,662,035. TIRE RETREAD MOLD. F. L. Smith, J. S. Caulfield, and C. J. Peterson, Sacramento, Calif.

Dominion of Canada

277,665 DEVICE FOR LOCATING PUNCTURES. J. Norton, Sault Ste. Marie, Ont.

277,728 TUBE APPARATUS. The Dunlop Rubber Co., Ltd., Regent's Park, County of London, assignee of T. B. Caldwell, Birmingham, County of Warwick, both in England.

277,729 RIM PACKER. The Dunlop Rubber Co., Ltd., Regent's Park, County of London, assignee of W. C. Watton, Birmingham, County of Warwick, both in England.

277,738 ALINING DEVICE. The Goodyear Tire & Rubber Co., assignee of E. F. Maas, both of Akron, O., U. S. A.

277,739 DOFF LATCH. The Goodyear Tire & Rubber Co., Akron, O., assignee of C. W. Young and J. H. Diggett, Goodyear, Conn., all in the U. S. A.

277,741 AIRBAG. The Goodyear Tire & Rubber Co., assignee of C. H. Roth, both of Akron, O., U. S. A.

277,943 GRINDER. C. E. Gardner, Gloucester, England.

278,006 TIRE BAND MACHINE. The Dominion Rubber Co., Ltd., Montreal, Que., assignee of A. O. Abbott, Jr., Grosse Point Park, Mich., U. S. A.

278,374 AIRBAG BUFFING MACHINE. The Goodyear Tire & Rubber Co., assignee of G. G. Andrews, both of Akron, O., U. S. A.

278,376 VULCANIZER. The Goodyear Tire & Rubber Co., assignee of R. W. Hainer, both of Akron, O., U. S. A.

278,377 TUBE SKIVING CLAMP. The Goodyear Tire & Rubber Co., assignee of J. C. Warden, both of Akron, O., U. S. A.

United Kingdom

282,131 TESTER. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, and L. J. Lambourn, Fort Dunlop, Erdington, Birmingham.

282,212 STRIPPER. A. Neef and V. Hardy, 243 Avenue Van Volxem, Forest, Brussels.

282,249 MOLDING PRESS. H. Berstorff Maschinenbauanstalt Ges., 49 Gross Buchholzerstrasse, Hanover, Germany.

282,550 MACHINERY GUARD. A. G. Hulme, 27 Calcutta Rd., Edgeley, G. H. Bamford, Gaythorn, Torkington, Hazel Grove, both in Stockport, Cheshire, and W. Brierley, Collier & Hartley, Ltd., Boro Works, Bridgefield St., Rochdale.

283,046. TIRE. J. Mitton, 292 Kingsbury Rd., Erdington, Birmingham.

283,054 COATING MACHINE. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, H. Trevaskis, and E. B. Marsh, Dunlop Rubber Co., Foleshill, Coventry.

Germany

455,713 TIRE ALARM. Feliks Mostalik, Bydgoszcz (Bromberg) West Poland. Represented by Georg Lorenz, Leipzig.

456,879 TREAD MOLD. Georg Turbillon, Grenoble, Isère, France. Represented by G. Loubier, F. Harmsen, and E. Meiszner, Berlin S.W. 61.

Designs

Germany

1,016,958 FLOORING ATTACHING DEVICE. Hannoversche Gummiwerke Excelsior, A.G., Hannover-Limmer.

1,017,768 VULCANIZING TREADS. Continental Caoutchouc und Gutta-Percha Compagnie, Hannover.

1,021,198 NIPPER DIPPING MOLD. Fromms Act Julius Fromm. Berlin, N. O. 18.

Process

United States

1,659,321 TIRE. R. E. Jenkins, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,659,677 WASHER. T. E. Welsh, Woodbridge, Conn.

1,662,018 TANK COVER. W. T. Van Orman, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

Dominion of Canada

277,608 RUBBER ARTICLE. A. R. Frans van der Mark, Weltevreden and H. Kremer, Meloewoeng, coinventors, both in Dutch East Indies.

277,740 TIRE. The Goodyear Tire & Rubber Co., assignee of R. E. Jenkinson, both of Akron, O., U. S. A.

278,335 RUBBER ARTICLE. The Anode Rubber Co., Ltd., London, E. C. 2, England, assignee of P. Klein, Budapest 7, Hungary, and A. Szegvari, Akron, O., U. S. A.

United Kingdom

282,502 RUBBER VULCANIZING. C. H. Gray, 106 Cannon St., London.

Germany

456,259 APPLYING DESIGNS AND LETTERS. Artifex Chemische Fabrik G.m.b.H., Stellingen near Hamburg.

456,532 PRODUCING ROUGHNESS ON HARD RUBBER, HORN, ETC. Jurgen Adolphsen, Bülowstrasse 9, Lubeck.

Chemical Patents

United States

1,659,936. MOLDING COMPOSITION. A compound composed of 8 per cent shellac, 21 per cent Kauri gum, 55 per cent mica, and 16 per cent vermilion to which is added a small quantity of rubber.—H. F. Albright, Jr., Oak Park, Ill., assignor to Western Electric Co., Inc., New York, N. Y.

1,660,213. COLORING AQUEOUS DISPERSIONS. The method consists in dissolving an oil soluble dye in sulphonated castor oil, forming a water emulsion of the solution and adding it to rubber latex.—M. C. Teague, Jackson Heights, N. Y., assignor to American Rubber Co., Boston, Mass.

1,660,851. BINDING MEDIUM PROCESS. A binding for colors, varnishes and cements consisting in treating ground old rubber with hydronaphthalene under heat and pressure to effect the formation of hydrogen sulphide and naphthalene. The resultant rubber is dissolved in a solvent of lower boiling point than naphthalene, the latter removed and the rubber revulcanized in the presence of the solvent.—J. Tengler, Tagerwilen, Canton Thurgau, Switzerland.

1,661,887. PRESERVING VULCANIZED RUBBER. The process of producing a paste for preserving vulcanized rubber, consisting in mixing glycerine benzaldehyde and talcum. To this is introduced a solution of raw rubber in paraffin oil at about 140 degrees C, afterwards raising the temperature to 180 degrees C.—H. W. Fiedler, Leipzig, Germany.

1,662,015. PREPARING THIAZOLES. A method of manufacturing 2-mercaptobenzothiazole which causes diortho-dinitrodiphenyl-disulphide to react with a water solution of a basic sulphide in the presence of hydrogen sulphide and carbon bisulphide.—L. B. Sebrell and J. Teppema, assignors to The Goodyear Tire & Rubber Co., all of Akron, O.

Dominion of Canada

277,693. TUBE PROOFING SUBSTANCE. A puncture proofing substance for pneumatic tubes containing crude rubber, Canada balsam, alcohol and an agent reacting with rubber to render it sticky.—R. C. Van Dyke, Grimsby, Ont.

278,011 BATTERY BOX. A composition of matter including fibrous material, wax of high melting point and bituminous material.—The Goliath Rubber Co., assignee of A. B. Mackey and E. A. Mackey, all of Cleveland, O., U. S. A.

278,247. CAN SEALING COMPOUND. A surfacing and joint sealing compound for application to metal cans consisting of raw rubber latex emulsified with colloidal clay.—G. F. Blombery, Lane Cove, near Sydney, N. S. W.

Rubber Patents, Trade Marks and Designs

278,375. Accelerator. A method of producing mercapto-benzo-thiazoles or their derivatives.—The Goodyear Tire & Rubber Co., assignee of L. B. Sebrell, both of Akron, O., U. S. A.

United Kingdom

282,011† Treating Rubber Latex. Concentrated latex containing alkali preservative is neutralized to improve its plasticity and cohesiveness on the mixing mill or other machine. Example, 100 parts of rubber in the form of 60 per cent latex containing 1 per cent ammonia is added to 22 parts carbon black and 30 parts clay in a closed mixer. After most of the ammonia is volatilized, 1¼ parts phosphoric acid is introduced and the mixture dried and milled.—Naugatuck Chemical Co., Naugatuck, Conn., assignee of W. A. Gibbons, 561 West 58th St., New York, N. Y., U. S. A.

282,271. Driving Belts. Driving belts, etc., of cotton or hemp are immersed in a natural or artificial aqueous dispersion of rubber which may have compounding and vulcanizing ingredients added to it.—C. Macintosh & Co., Ltd., and S. A. Brazier, 2 Cambridge St., Manchester, and T. E. Andrew, Dunlop Cotton Mills, Rochdale, Lancashire.

282,565. Oils. Oils resembling petroleum are obtained by destructively distilling a mixture of rubber scrap, vulcanized rubber waste, or their distillates with one or more natural bleaching earths or Japanese acid clay—H. Nishida and K. Shimada, 1446 Aratosarakubo, Oaza, both in Kiriu, Gumma, Japan.

282,617. Rubber Solutions. The oily product obtained by the catalytic hydrogenation of oxides of carbon is used as a solvent in the preparation of rubber solutions either alone or mixed with introcellulose, coloring matters, etc.—J. Y. Johnson, 47 Lincoln's Inn Fields, London.

282,737† Coating Metal Surface. A preferred solution is composed of 3 ounces of rubber, 3 quarts of solvent and 1 ounce of sulphur. After application the coating is subjected to heat at 225 to 270 degrees F.—R. M. Withycombe, Wyoming, Macquarie St., Sydney, Australia.

282,778† Isomerizing Rubber. Conversion products of rubber are obtained by heating it with a phenol and one of many enumerated substances. In an example, 100 parts of rubber, 10 to 20 parts of phenol and 20 to 30 parts of the third compound are heated at 134 to 160 degrees C. for about 20 hours.—The B. F. Goodrich Co., 1780 Broadway, New York, assignees of H. L. Fisher, 275 Leonia Ave., Leonia, N. J., both in U. S. A.

282,892. Accelerator. Formamide is used as a vulcanization accelerator. According to an example, 100 parts of rubber, 10 parts of zinc white, 5 parts of sulphur, and 1.5 parts of formamide are vulcanized for 50 minutes at 140 degrees C.—W. Carpmael, 24 Southampton Bldg., London (I. G. Farbenindustrie, A. G., Frankfort-on-Main, Germany).

†Not yet accepted.

283,049. Rubber Coated Metal. A process of attaching rubber coatings to metal surfaces by the employment of an intermediate layer of rubber solution in which is contained an acid substance which attacks the metal and so facilitates the production of metallic sulphide to form a bond between the rubber and metal. A suitable substance to be added to the rubber solution is an oxidizable oil treated with sulphur chloride.—F. A. Ahrens, 147 Allee, Bockenem, Germany.

283,122† Junction Rubber. In the manufacture of sheet material consisting of layers of vulcanized and unvulcanized rubber, the latter layer is prevented from vulcanizing by incorporating with it a neutralizer of vulcanization. Suitable neutralizers are small amounts of inorganic acids, acid salts of alkali earth metals, or organic acids.—L. C. Peterson, Akron, O., U. S. A.

283,249. Tire Filler. A composition for making or filling tires.—A. E. Mills, 21 Farncombe St., and W. T. Galbraith, 6 Lower Manor Rd., both in Farncombe, Surrey

Germany

455,527 Plastic Masses. Ellenberger & Schrecker, Bürgerstrasse 94, Frankfurt a. Main.

455,551 Plastic Masses. Sinit A.G., Basel, Switzerland. Represented by Dr. G. Winterfeld, Berlin S.W. 61.

456,835. Rubber Mixings. Ernest Hopkinson, New York, N. Y., U. S. A., Represented by R. H. Korn, Berlin S.W. 11.

456,909 Rubber Mixings. Metallbank und Metallurgische Gesellschaft A.G., Frankfurt a. Main.

General

United States

February 14, 1928*

1,658,801 Nasal Cleaning Device. J. E. Condren, Erie, Pa.

1,659,034 Brake Pulsator. B. A. Linderman, New York, N. Y., assignor to Linderman & Co., Wilmington, Del.

1,659,066 Swab Cup. B. F. Zeigler, Jr., assignor to The Guiberson Corp., both of Dallas, Tex.

1,659,100 Thigh Protector. L. W. Hardage, Nashville, Tenn.

1,659,248 Swimming Ring. A. J. Eldon, Mount Vernon, assignor to Paramount Rubber Consolidated, Inc., Tuckahoe, both in N. Y.

1,659,371 Roller. A. B. Merrill, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,659,531 Tire. F. A. Krusemark, Akron, assignor to Lambert Tire & Rubber Co., Barberton, both in Ohio.

Reissue

16,881 Heel. A. Costantino, Providence, R. I., assignor to United Shoe Machinery Corp., Paterson, N. J. Filed March 15, 1923. Serial No. 625,385. Original No. 1,423,399, dated July 18, 1922, Serial No. 446,100, filed Feb. 18, 1921.

February 21, 1928*

1,659,644 Soap Dish. W. Vernet, New York, N. Y.

1,659,680. Woven Cord Fabric. A. Burns, assignor to West Boylston Mfg. Co., both of Easthampton, Mass.

1,659,702 Tire Theft Preventor. J. F. Raleigh, assignor to Pines Winterfront Co., both of Chicago, Ill.

1,659,827 Box Toe Blank. J. W. May, Belmont, Mass.

1,660,046 Overshoe. V. B. Phillips, Cleveland, O., assignor to Bourn Rubber Mfg. Co., Providence, R. I.

1,660,066 Dice Box. M. H. Briesemeister, South Milwaukee, Wis.

1,660,092 Heel. W. W. Rodgers, assignor to W. W. Rodgers, W. J. Shamberger and R. L. Shamberger, trustees, all of Baltimore, Md.

1,660,095 and 1,660,096. Massage Implement. S. Schiele, St. Louis, Mo.

1,660,195 Shaft Coupling. F. J. Heideman, assignor to T. C. Whitehead, both of Detroit, Mich.

1,660,307 and 1,660,308 Running Board. B. Bronson, Lakewood, assignor to The Ohio Rubber Co., Cleveland, both in O.

February 28, 1928*

1,660,378 Ball. F. Dieterle, assignor to A. J. Reach Co., both of Philadelphia, Pa.

1,660,522 Wheel. H. M. Patch, Seattle, Wash.

1,660,538 Roll. R. H. Whitney, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,660,676 Car Body Mounting. L. C. Josephs, Jr., Allentown, Pa., assignor to International Motor Co., New York, N. Y.

1,660,698 Heel. O. P. Williams, Sr., Southgate, Calif.

1,660,729 Soap Tray. J. G. Strock, Pittsburgh, Pa.

1,660,902 Tire Closure. T. E. Adams, Cleveland, O.

1,661,078 Wall Base Covering. T. J. Mell, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

March 6, 1928*

1,661,220 Spring Shackle. H. D. Geyer, assignor to The Inland Mfg. Co., both of Dayton, O.

1,661,227 Candy Mold. H. McAllister, Wishaw, Scotland.

1,661,316 Scutching Machine. J. V. Steenkiste and J. V. Maercke, Wevelghem, Belgium.

1,661,373 Tire. A. Kusper, Dayton, O., assignor of one-half to W. Stefanowski.

1,661,407 Paving Block. A. W. Butler, West Bridgewater, Mass.

1,661,461 Tube Casing. A. B. Broluska, Detroit, Mich.

1,661,462 Tire. A. B. Broluska, Detroit, Mich.

1,661,502 Tire. J. M. Riojas, Eagle Pass, Tex.

1,661,704 Water Silencer. J. A. Osborne, Akron, O.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Rubber Patents, Trade Marks and Designs

1,661,713 DENTAL DEVICE. H. E. Barker, Brooklyn, N. Y.

1,661,754 TIRE. S. C. Hatfield, Baltimore, Md.

1,661,761 CORSET. W. Kops, assignor to Kops Bros., Inc., both of New York, N. Y.

1,661,978 TIRE. R. J. Talbott, Tulsa, Okla.

1,662,006 COUPLING. E. G. Kimmich, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,662,007 TIRE. O. J. Kuhlke, assignor to The Kuhlke Machine Co., both of Akron, O.

Dominion of Canada

February 7, 1928

277,645 HEEL. L. J. Harrison, Derby, Conn., U. S. A.

277,746 TIRE. The Kuhlke Machine Co., assignee of O. J. Kuhlke, both of Akron, O., U. S. A.

277,751 SHOE. The Miller Rubber Co., Akron, O., assignee of D. H. Finberg, New York, N. Y., both in the U. S. A.

February 14, 1928

277,815 OVERSHOE. T. J. Kemper, Bronx, New York, N. Y., U. S. A.

277,829 ELASTIC WEBBING. M. M. Rittenhouse, Toronto, Ont.

277,831 WHEEL. T. H. Rushton, 11 Blyth Road, County of Nottingham, England.

February 21, 1928

277,965 TOY. R. Patoran, Schumacher, Ont.

February 28, 1928

278,105 TIRE. G. D. Pearson, Montreal, Que.

March 6, 1928

278,290 CONDUIT AND CORE MANUFACTURE MOLD. T. E. Murray, Brooklyn, N. Y., U. S. A.

278,304 ARTIFICIAL BAIT. H. Readman, Earlston, Berickshire, Scotland.

278,387 ROLL. The Lovell Mfg. Co., assignee of J. J. Rathers, both of Erie, Pa., U. S. A.

278,388 WRINGER ROLL. The Lovell Mfg. Co., assignee of J. J. Rathers, both of Erie, Pa., U. S. A.

278,391 TIRE TAPE. Michelin et Cie (Société en Commandite par Actions), assignee of A. J. Michelin, both of Clermont-Ferrand, France.

United Kingdom

February 1, 1928

281,874 INSPECTION COVER. A. C. Barlow, 25 Shackleton Rd., Southall, and M. E. A. Wright, 7 Briar Road, Kenton, both in Middlesex.

281,933 TOY. H. Lindemann, 52 Königstrasse, Wandsbek, Germany.

281,962 SPLASH GUARD. A. H. Kay, 27 King St. West, and T. A. Seaton, 38 Palmerston St., Moss Side, both in Manchester.

February 8, 1928

282,160 PIPE JOINT. Stanton Ironworks Co., Ltd. (near Nottingham), Derbyshire, and P. H. Wilson, Ivy Mount, Carlton, Nottingham.

282,181 TIRE. J. B. Parker, 25 Clairville Rd., Middlesbrough.

282,188 SPRING. Riley (Coventry) Ltd. and H. Rush, Durbar Ave., Lockhurst Lane, Coventry.

282,265 PIPE JOINT. F. S. Niven, 32 Glenelg Rd., Acre Lane, Brixton, London.

282,355† DRIVING ROPE. Traverso & Co., 4 Piazza San Siro, Genoa, Italy.

February 15, 1928

282,514 ARCH SUPPORT. D. Neal & Sons, Ltd., 122 Larden Rd., Acton, London, and H. J. Neal, Maple Walk, Cooden Beach, Bexhill-on-Sea.

282,534 SHOCK ABSORBER. L. Turner & Co., and A. Turner, Deacon Street Works, Grange Lane, Leicester.

282,563 TONE ARM JOINT. H. Burrows, West Thorn, Breck Rd., Poulton-le Fylde, Lancashire.

282,572 TIRE VALVE. H. C. Hall, 141 Moorgate, London.

282,579 CARRIER. J. Sutton, 107 Crofton Park Rd., Brockley, London.

282,584 WIND SCREEN. F. W. Whitehead, Fairfax, Wellsway, Bath.

282,587 TIRE. K. W. Krone, 2139 California St., and I. C. Cohen, 109 Golden Gate Ave., both in San Francisco, U.S.A.

February 22, 1928

282,724† SEAT SPRING. A. Dufaux, Rue de la Grande Chaumiere, Paris.

282,850 TIRE VALVE. T. Beasley, 33 Narbonne Ave., Clapham Common, London.

282,937 BOOT SOCK. R. Nettl, 13 Hulme Hall Ave., Cheadle Hulme, Cheshire.

282,941 TIRE. T. Sloper, Southgate, Devizes, Wiltshire.

283,017 SHOCK ABSORBER. S. Camm, Firle, Sugden Rd., Long Ditton, Surrey, and H. J. Hawker Eng. Co., Ltd., Canbury Park Rd., Kingston-on-Thames.

February 29, 1928

283,237 TIRE. J. Barger, 6 Mary Terrace, Regents Park, London.

283,308 MAT. S. C. Corbett, Gothic Arcade, Snow Hill, Birmingham.

283,321 GAITER. W. A. Tompkins, 10 Westleigh Rd., and S. Bastock, The Highams, Oakland Ave., Thurmaston, both in Leicester.

283,359 COAT HOOK. H. G. Elliott, Pearley, Finchley Ave., Finchley, London.

†Not yet accepted.

Germany

455,531 LEGGING. Neue Gummigamaschen G.m.b.H., Neue Jakobstrasse 8, Berlin S. 14.

455,906 BLOCK BELT. Rudolph Toderwald, Menzelstrasse 9, Berlin-Grunewald.

456,298 OVERSHOE WITHOUT HEEL. John Goldschmidt, Schönhausenstrasse 19, Leipzig-Gohlis.

456,378 TEAPOT SPOUT. Else Jaacks, nee Gnutzmann, Mundsburgerdamm 32, Hamburg 24.

456,905 ASPIRATOR. Dr. Jakob Clemens, Sterkrade.

Designs

Germany

1,016,970 AUTOMOBILE FOOTREST. Karl Facius, Cyriaksring 5, Braunschweig.

1,017,244 CREPE RUBBER SHOE. Heinrich Raimann, Hermsdorfer strasse 11, Dresden.

1,017,327 HAND PROTECTOR FOR MOTORCYCLES AND BICYCLES. Nikolaus Jakobs, Fell b. Trier.

1,017,421 SPONGE RUBBER BRUSH. Max Hackel, Pösneck, Thuringia.

1,017,517 FEEDING BOTTLE COVER. Rheinische Gummigesellschaft W. Klotz & Co., Dusseldorf.

1,017,571 RAINCOAT. Grünzweig & Schlesinger, Köpenickerstrasse 80-82, Berlin S. O. 16.

1,017,692 COVER FOR HEAD CUSHION. Dr. Max Starck, Bautzen.

1,017,793 SCRUBBING MACHINE HANDLE. Siemens-Schuckertwerke, A.G., Berlin-Siemensstadt.

1,018,100 HEEL WITH REMOVABLE NON-SLIPPING DEVICE. Wilhelm Eller, Kerststrasse 23, Kaiserslautern.

1,018,338 RAILWAY BRAKE. Peter Rost, Gummiwarenfabrik, Cologne.

1,018,712 SPONGE RUBBER CUSHION FOR OPERATION TABLES, etc. Hannoversche Gummiwerke Excelsior, A.G., Hannover-Limmer.

1,018,848 DRIVING BELT. Berliner Maschinen - Treibriemen - Fabrik Adolph Schwartz & Co., Berlin N. 39.

1,018,902 CRUTCH CAP. Friedrich Geffers, Dorotheenstrasse 24, Erfurt.

1,019,865 APRON. Otto Wulfing, Antwerpnerstrasse 13, Cologne.

1,020,465 MINING JACKET. H. Hohendahl Gummi-und Asbestgesellschaft m.b.H., Essen.

1,021,054 STOCKING. Firma Franz Viertel, Zeulenroda, Thuringia.

Designs

United States

74,454 TIRE. Term 14 years. A. J. Shaukis, Haverhill, Mass.

74,554 SHOE SOLE OR ANALOGOUS ARTICLE. Term 7 years. D. A. Cutler, Wollaston, assignor to Alfred Hale Rubber Co., Atlantic, both in Mass.

74,583 OVERSHOE. Term 14 years. K. L. Valentine and George Ramsey, Jersey City, N. J.

74,640 ELASTIC GARTER WEBBING. Term 7 years. F. J. Zimmerer, Jr., assignor to The Russell Mfg. Co., both of Middletown, Conn.

Rubber Patents, Trade Marks and Designs

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b) are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

February 14, 1928

Act of February 20, 1905

238,580 Fancy design—bathing caps. The B. F. Goodrich Co., New York, N. Y.

238,692 CROWN—suspender, garters and belts. Crown Suspender Co., Inc., New York, N. Y.

238,693 ELF—infants' rubber pants and knit shirts. W. T. Grant Co., Lynn, Mass., and New York, N. Y.

238,764 MAC-A-MAC — rain, waterproof, oiled and all clothing of rubberized material. Excello Rubber Co., Inc., New York, N. Y.

238,770 NAQUA SOLE — shoes soles of leather, composition and rubber, etc. Shaft-Pierce Shoe Co., Fairbault, Minn.

238,782 MASTERBILT—shoes made of leather, fabric, rubber, etc. Craddock-Terry Co., Lynchburg, Va.

238,838 KWIK—slider controlled multiple separable fasteners for boots and shoes. United States Rubber Co., New York, N. Y.

238,882 Representation of a tiger holding a package in his mouth—cement. The American Rubber Export Co., Akron, O.

Act of March 19, 1920

238,911 LANE BRYANT—leather, rubber and fabric gloves, etc. Lane Bryant, Inc., New York, N. Y.

238,957 SECTION REPAIR — tire casing boots. Out West Mfg. Co., Denver, Colo.

February 21, 1928

Act of February 20, 1905

238,971 Representation of an automobile on which are superimposed the words: "SPEED TIRE CO."—pneumatic tire inner tubes and shoes or casings. Speed Tire Co., Inc., Chicago, Ill.

239,030 Triple square containing the words: "LUCKY STRIKE" — tire tube patches. Henry B. Egan, doing business as Lucky Strike Patch Co., Muskogee, Okla.

239,031 OSO-SOFT—pneumatic cushions and mattresses. Eno Rubber Corp., Los Angeles, Calif.

239,087 AUTO VITA—gasket and rubber cement. Auto Vita Mfg. Co., Chicago, Ill.

239,116 BALL-O-FUN — inflated rubber balls. Ball-O-Fun Corp., Los Angeles, Calif.

239,117 SUPER SEAL—patches for tires and other rubber goods. Louis G. Chapman, doing business as Super Seal Patch Co., Baltimore, Md.

239,142 Representation of a tube which contains the words: "RUBBER-WELD," "NOT GENUINE UNLESS BEARING THIS TRADE MARK," "THE ORIGINAL RED CEMENT," "FOR THE REPAIR OF RUBBER GOODS," and "RUBBER-WELD SALES CO., CAMBRIDGE, MASS."—Cement. Rubber Weld Sales Co., Cambridge, Mass.

February 28, 1928

Act of February 20, 1905

239,234 Pennant containing the word: "SLUSHERS"—overshoes. W. T. Grant Co., Lynn, Mass., and New York, N. Y.

239,309 "CADET"—pneumatic tires and inner tubes. Samson Tire & Rubber Corp., Los Angeles, Calif.

Act of March 19, 1920

239,336 SPORTPACS—boots and shoes. Firestone Footwear Co., Hudson, Mass.

March 6, 1928

Act of February 20, 1905

239,382 HY-BALL—inflatable play balls. Eno Rubber Corp., Los Angeles, Calif.

239,475 OMEGA—toothbrushes. Rubber & Celluloid Products Co., Newark, N. J.

239,476 ALPHA—toothbrushes. Rubber & Celluloid Products Co., Newark, N. J.

239,497 WARDWEAR — automobile tires. Montgomery Ward & Co., Inc., Chicago, Ill.

239,523 Representation of a walrus, above the representation the words: "LE MORSE"—gloves of leather, rubber, etc. La Société Anonyme The Destrooper's Raincoat Co., Brussels and Ixelles-Brussels, Belgium.

239,576 BIBENDUM—pneumatic tires including inner tubes and casings. Michelin et Cie, Clermont-Ferrand (Puy-De-Dome), France.

239,577 CONFORT BIBENDUM—pneumatic tires including inner tubes and casings. Michelin et Cie, Clermont-Ferrand (Puy-De-Dome), France.

239,589 YUGO—boots and shoes of rubber, or rubber and leather. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.

Dominion of Canada

February 14, 1928

43,236 "TOM MCAN"—footwear, heels and soles. L. E. Levey and C. H. Black, Toronto, Ont.

43,278 "VELVETEX"—black pigments for use in the rubber industry. Binney & Smith Co., New York, N. Y., U. S. A.

February 21, 1928

43,287 "REVERTEX"—rubber and rubber substitutes for technical purposes particularly latex in natural, concentrated or dry state, tires, bands and belting. K. D. P., Ltd., 28, Fenchurch St., London, England.

43,288 Circle enclosing the capital letters: "R" and "X" situated on opposite sides of a device comprising a vertical straight line, the lower end of which branches out into three parts connected at the bottom by a horizontal straight line, whilst the upper end partly projects into a space formed of an almost closed substantially ovoid line—rubber and rubber substitutes for technical purposes, particularly latex in natural, concentrated or dry state, tires, bands and belting. K. D. P., Ltd., 28, Fenchurch St., London, England.

43,321 "LOXOL"—rubber articles and compositions. F. G. Tarn and Henry Farrell, Winnipeg, Manitoba.

43,336 "GLOSHETTE" — footwear. Gutta Percha & Rubber, Ltd., Toronto, Ont.

43,337 "RAINETTE" — footwear. Gutta Percha & Rubber, Ltd., Toronto, Ont.

March 6, 1928

43,348 "OVERLAND" — heels and soles. Leonard & Barrows, Middleboro, Boston, Mass., U. S. A.

United Kingdom

February 1, 1928

473,490 Pennant containing the words: "MIOM GALLIA"—raw or partly prepared plastic materials having a base of caoutchouc. Compagnie Générale D'Electricité, 54 rue La Boetie, Paris, France.

482,497 ELARCO—baby soothers, teats, etc. L. A. Jackson, trading as The London Rubber Co., 183, Aldersgate St., London, E. C. 1.

485,409 SWASHBUCKLER—appliances made principally of rubber for use on baths and the like to prevent splash. Roger Dearman Mennell 117, Fairacres Rd., Oxford.

485,990 Circle containing the letters: "M R," beneath the circle a pennant bearing the word: "STOCKPORT"—play balls. Murray & Ramsden, Ltd., Vulcanite Works, Carrington Field St., Stockport.

486,404 "REPARETTE"—pneumatic tire repair outfits. David Mosley & Sons, Ltd., Chapel Field Works, Chapel Field Lane, Ardwick, Manchester.

February 8, 1928

485,301 TRILLION—braces, belts and suspenders. George Irvine, trading as The Trillion Brace Co., Wardrobe Chambers, 146a, Queen Victoria St., London, E. C. 4.

485,447 DURIDE—all goods included in class 40. The Leyland & Birmingham Rubber Co., Ltd., 24-30, Duke St., Aldgate, London, E. C. 3.

485,893 FEROBESTOS — rubber and gutta percha goods. Ferodo, Ltd., Sovereign Mills, Hayfield Rd., Chapel-en-le-Frith, Derbyshire.

485,894 FERODO—rubber and gutta percha goods. Ferodo, Ltd., Sovereign Mills, Hayfield Rd., Chapel-en-le-Frith Derbyshire.

February 15, 1928

485,818 MATCHPOINT—tennis balls. -F. A. Davis, Ltd., Brooke's Market, Brooke St., Holborn, London, E. C. 1.

486,614 ESSANART—dressing for rubber tires, etc. R. & S. Pobjoy, 100, Richmond Rd., Dalston, London, E. 8.

The Market for Rubber Scrap

The market continues to show much activity but scrap is weak in all grades. Collections continued moderate in volume the past month.

AIR BRAKE HOSE. Prices are unchanged from a month ago and demand active.

BOOTS AND SHOES. Quotations are nominal and unchanged and stocks unsought.

INNER TUBES. The drop in crude rubber prices has weakened those of inner tubes, although all grades are in good demand.

MECHANICAL GOODS. There is a fair movement in these grades. Black scrap is quiet and steady at the prices of a month ago.

New York Quotations for Carload Lots

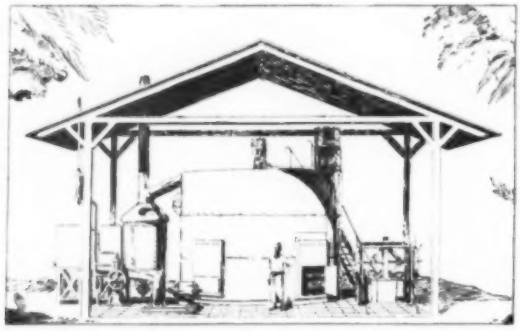
March 26, 1928

Boots and Shoes			
Boots and shoes, black	lb.	$0.01¼@	$0.01⅞
Red and white	lb.	.01 @	.0115
Trimmed arctics, black	lb.	.00¾@	.01
Untrimmed arctics	lb.	.00¾@	.01
Tennis shoes and soles	lb.	.01 @	
Hard Rubber			
No. 1 hard rubber	lb.	.09½@	.10
Battery jars, black compound	lb.	.01 @	.01⅛
Inner Tubes			
No. 1, floating	lb.	.06¾@	.07
No. 2, compounded	lb.	.04½@	.04¾
Red	lb.	.05½@	.06
Mixed tubes	lb.	.04½@	
Mechanicals			
Mixed black scrap	lb.	.00¾@	.01
Heels	lb.	.00½@	.00⅝
Hose, air brake	ton	35.00	@38.00
regular soft	ton	15.00	@17.00
No. 1 red	lb.	.02 @	.02½
No. 2 red	lb.	.01 @	.01¾
White, druggists' sundries	lb.	.02½@	.03
Mechanical	lb.	.01½@	.01⅝
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	24.00	@24.50
Beadless	ton	33.00	@34.00
White auto tires with beads	ton	40.00	@42.00
Beadless	ton	50.00	@52.00
Mixed auto peelings	ton	35.00	@36.00
Solid—			
Mixed motor truck, clean	ton	22.50	@23.00

PLASTIKON

Plastikon is a new rubber cement that requires no heat to insure a joint. As a waterproof elastic adhesive more sticky than ordinary rubber cement, it can be applied to any clean dry surface, giving a permanent, resilient bond. Its principal applications are found at present in the automobile industry for the attachment of running board covers to the metal base.

Plastikon is made of two consistencies, the first viscous and too thick to be applied by a brush, the second sufficiently thin for brush working.



A SMALL SPRAY PLANT UNIT OF THE UNITED STATES RUBBER COMPANY, DEVELOPED FOR USE ON SMALL ESTATES FOR MAKING SPRAYED RUBBER

Statistics Compiled from Questionnaire[1] Covering the Fourth Quarter of 1927

RECLAIMED RUBBER	Inventory at End of Quarter (Long Tons)	Production (Long Tons)	Shipments (Long Tons)	Consumption (Long Tons)
Reclaimers solely (7)	5,305	19,438	17,940	.....
Manufacturers who also reclaim (25)	8,823	27,092	8,831	20,111
Other manufacturers (77)	5,439	.....	.....	15,657
Totals	19,567	46,530	26,771	35,768

SCRAP RUBBER	Inventory at End of Quarter (Long Tons)	Consumption of Manufacture Reclaimed (Long Tons)	Due on Contract at End of Quarter (Long Tons)
Reclaimers solely (7)	44,142	35,321	7,461
Manufacturers who also reclaim (21)	17,482	26,010	11,615
Other manufacturers (17)	392	.....	.....
Totals	62,016	61,331	19,076

NUMBER OF TONS OF CRUDE RUBBER CONSUMED IN THE MANUFACTURE OF RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS OF MANUFACTURED RUBBER PRODUCTS

PRODUCTS	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries:		
Automobile and motor truck pneumatic casings	46,246	129,497,000
Automobile and motor truck pneumatic tubes	10,096	20,198,000
Motorcycle tires (casings and tubes)	117	535,000
Bicycle tires (single tubes, casings and tubes)	221	746,000
All other pneumatic casings and tubes not elsewhere specified	13	199,000
Solid and cushion tires	2,665	6,201,000
All other solid tires	86	232,000
Tire sundries and repair materials	1,148	4,725,000
Totals	60,592	162,333,000

PRODUCTS	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Other Rubber Products:		
Mechanical rubber goods	3,841	22,830,000
Boots and shoes	4,637	37,785,000
Insulated wire and insulating compounds	909	9,255,000
Druggists' sundries, medical, surgical and stationers' rubber goods	695	3,487,000
Waterproof cloth and clothing (except rubber sheetings)	1,140	7,957,000
Hard rubber goods	165	2,318,000
Heels and soles	1,220	5,569,000
Rubber flooring	266	1,423,000
Miscellaneous, not included in any of the above items	932	3,046,000
Totals	13,799	93,670,000
Grand totals—all products	74,391	256,003,000

INVENTORY OF CRUDE RUBBER IN THE UNITED STATES AND AFLOAT FOR UNITED STATES PORTS

ON HAND	Plantation (Long Tons)	Para (Long Tons)	All Other (Long Tons)	Totals
Manufacturers	73,803	2,435	1,694	77,932
Importers and dealers	16,349	1,377	943	18,669
Totals on hand	90,152	3,812	2,637	96,601
AFLOAT				
Manufacturers	10,871	....	....	10,871
Importers and dealers	32,989	715	315	34,019
Totals afloat	43,860	715	315	44,890

[1]Number of rubber manufacturers that reported data was 161; crude rubber importers and dealers, 44; reclaimers (solely), 7; total daily average number of employes on basis of fourth week of October, 1927, was 151,415.

It is estimated that the crude rubber consumption figures are *92 per cent of the total, and the crude rubber inventory 95 per cent of the total for the entire industry.

*Based on survey made by the Department of Commerce for the first six months of 1925.

AMAZON VALLEY RUBBER EXPORTS FOR 1927 AMOUNTED TO 28,782 long tons which is over the 1926 figure of 24,298 long tons.

THE APPROXIMATE AMOUNT OF CONSUMPTION OF CRUDE RUBBER in France for 1927 was 34,271 long tons which varies little from the 34,240 long tons consumed in 1926.

THE SENATE POST OFFICE COMMITTEE PASSED FAVORABLY ON the Phipps' Federal Aid Bill authorizing $75,000,000 for road construction in each of the years of 1930 and 1931.

Review of the Crude Rubber Market

The Rubber Exchange of New York, Inc.

TRANSACTIONS on the Rubber Exchange from February 23 to March 22 inclusive were 35,857 lots, equivalent to 87,641½ tons. The outstanding causes of this activity was the investigation now in progress by the British Civil Research Committee into the restriction of rubber, the uncertainty regarding its outcome, and the losses occasioned by the drop in prices. In the decline, which has been in progress since early in February, the lowest level for crude rubber since 1924 was reached March 12 when spot ribs closed at 23.8 cents.

The turn of the tide apparently came March 19 on the news that the American buying organization familiarly known as the "Pool" had negotiated a credit of $60,000,000, one half of which was immediately available to support its market operations. There has been much discussion as to the amount of loss sustained by the pool by the downward movement of rubber prices from around the 40 cent level. It is thought by shrewd observers in the trade that since the members of the pool are the principal factors in the production of tires in the United States their leading interest is that tire prices shall be maintained for the next few months within which time a large part of their high priced rubber will be liquidated in tire sales. A drop in tire prices after that event will find the companies intrenched with rubber at current levels and today's paper losses virtually wiped out. There was much excited trading as prices fell but at all times order prevailed in the trading and the Exchange functioned admirably.

The report March 29, that Premier Baldwin would make a statement April 4 on restriction had no effect on the local market.

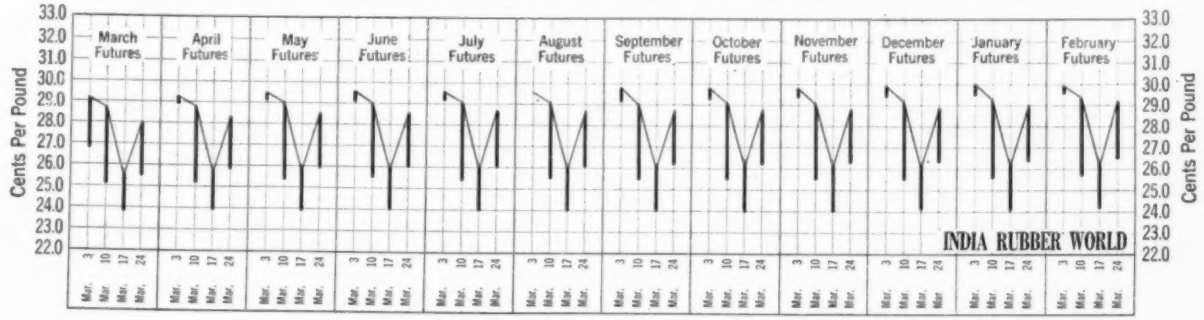
The statistical position of rubber is very strong both as regards stocks and consumption. Stocks in the United States are about 3,000 tons larger than a month ago, and imports are reported 10,000 tons a month ahead of consumption. Reviewed by weeks the market presented the following faetures.

Although the week ended February 25 included a holiday, the transactions for that week surpassed all records for volume for a single week since the opening of the Exchange. The total was 8,111 contracts, equal to 20,277½ tons. New low levels were established and the market was in most uncertain mood because of disquieting rumors. An interesting feature of the week was the sale of a considerable quantity of rubber for future delivery for account of a foreign manufacturer. Many American manufacturers doubtless availed themselves of the facilities of the Exchange to effect price insurance on their rubber supply.

The week ended March 3 prices were steadier and showed a slight advance. There were numerous rumors afloat concerning cooperative action between the Dutch and British. A meeting took place at The Hague on March 1 and the Dutch appointed a committee to consider restriction for the benefit of the Dutch growers when and if such action becomes necessary. Dutch action will probably be deferred pending information of the recommendations of the Civil Research Committee, some weeks in the future. Spot closed March 3 at 29.2 cents.

During the week terminated March 10 the market experienced another break as a result of heavy selling in London, and the opinion that little can be expected from Dutch interests as concerns cooperation with the British. Sentiment of meetings held by planter's associations in the Far East is about evenly divided

New York Rubber Exchange—High and Low Monthly Futures



The Rubber Exchange Prices

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLOSING PRICES—CENTS PER POUND

	February			March																			
1928	27	28	29	1	2	3	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	24
March ...	26.8	28.4	28.9	28.7	28.7	29.2	28.7	28.4	26.6	25.3	25.1	25.3	23.8	24.0	25.3	24.5	24.9	25.5	28.0	26.5	25.5	26.1	27.2	**26.7**
April	29.0	28.9	29.3	29.0	28.9	29.3	28.8	28.5	26.5	25.4	25.2	25.4	23.9	24.2	25.2	24.7	25.1	25.7	28.3	26.6	25.8	26.2	27.4	**27.0**
May	29.5	29.2	29.5	29.2	29.1	29.5	29.0	28.6	26.6	25.5	25.4	25.5	23.9	24.4	25.2	24.8	25.3	25.8	28.5	26.8	25.9	26.2	27.6	**27.1**
June	29.5	29.3	29.6	29.2	29.1	29.5	29.0	28.7	26.6	25.6	25.4	25.5	24.0	24.5	25.4	24.9	25.3	25.9	28.6	26.8	26.0	26.7	27.7	**27.1**
July	29.6	29.4	29.6	29.2	29.2	29.6	29.1	28.7	26.5	25.6	25.4	25.5	24.0	24.6	25.6	24.9	25.4	25.9	28.7	26.8	26.0	26.8	27.7	**27.2**
August ...	29.6	29.4	29.7	29.3	29.2	29.6	29.1	28.7	26.6	25.7	25.5	25.4	24.0	24.7	25.8	25.0	25.6	25.9	28.7	26.9	26.1	26.8	27.8	**27.3**
September.	29.6	29.4	29.8	29.4	29.2	29.7	29.0	28.8	26.7	25.7	25.5	25.7	24.0	24.5	25.9	25.1	25.8	26.0	28.7	27.0	26.2	26.9	27.8	**27.3**
October...	29.7	29.4	29.8	29.5	29.3	29.7	29.1	28.8	26.7	25.8	25.5	25.6	24.0	24.7	26.0	25.1	25.8	26.1	28.8	27.1	26.2	26.9	27.9	**27.4**
November..	29.8	29.4	29.8	29.5	29.4	29.7	29.1	28.8	26.7	25.8	25.5	25.6	24.0	24.8	26.0	25.1	25.8	26.1	28.8	27.1	26.3	26.9	27.9	**27.4**
December..	29.9	29.5	29.8	29.5	29.4	29.7	29.2	28.8	26.7	25.9	25.5	25.6	24.1	24.8	25.9	25.1	25.8	26.1	28.9	27.1	26.3	26.9	28.0	**27.4**
1929																								
January ..	30.0	29.6	29.9	29.6	29.5	29.8	29.3	28.9	26.8	25.9	25.6	25.7	24.1	25.0	26.1	25.2	25.8	26.2	29.0	27.2	26.4	27.1	28.1	**27.5**
February..	....	....	....	29.7	29.6	29.9	29.4	29.0	26.9	26.0	25.7	25.8	24.2	25.0	26.2	25.3	25.8	26.2	29.2	27.3	26.5	27.2	28.9	**27.5**

for and against the continuance of restriction. It is considered that the market had discounted whatever action may be taken in the matter. Spot closed at 25.3 cents.

The week closed March 16 was very active and nervous by reason of rumors on the restriction situation. Prices, however, were inclined to be steadier. Spot closed at 24.9 cents.

The week ended March 24 opened with a sharp upward reaction of prices due to the negotiation of a credit of $60,000,000 by the pooled interests. The rise was about three cents. The following day the reaction reduced this advance to 1½ cents and the day following about as much more. However the purpose was served and the remainder of the week trading was very active and the price firmer and improved, spot closing on March 24 at 27.2 cents.

Several sales of seats on the Rubber Exchange occurred the past month and the price of each succeeding sale was at an advance over its predecessor. The record is as follows: The membership of George A. M. Churchill was sold February 23 to L. W. Dumont of L. W. Dumont & Co. for $6,600, an increase of $100 over the previous sale. The seat of E. C. Anderson sold to H. F. Delanie for another, at $6,750. B. S. Ellis sold his seat to L. W. Dumont, for another, at $7,000. This price represents an increase of nearly $3,000 over the average price of seats transferred during the past year.

New York Outside Market

Dealings in the outside market were very limited the past month. Factories seem to have been well supplied with rubber for current needs and quite willing to wait for definite news regarding the fate of the restriction scheme and settling down of prices to rock bottom. The price of ribbed smoked sheets has been almost steadily downward for the past two months from the 40 cent level. On March 1 it was at 28⅝ cents. It averaged 28⅞ for the week ended March 3; in the three succeeding weeks the averages were 25⅞ cents, 24¾ and 27 cents respectively. The lowest level for spot was 23¾ cents on March 12. From that price there was an upward tendency carrying the value up one week later to 28⅜ cents on March 19. This price held only for a day and slumped back to 27⅜ cents on March 24. The progress of the market for the past month was far from satisfactory as is indicated by the following record by weeks.

During the week ended March 3 the market was filled continuously with rumors of what would be done regarding restriction by the English and Dutch authorities. There was general selling and bearish sentiment in the first half of the week. At the close the market was steady and firmer, factories were interested only in rubber for their nearby needs.

The market for the week terminated March 10 was generally weak and depressed. The fact that the Singapore Chamber of Commerce voted strongly in favor of the abolishment of restriction caused rubber to sell off sharply. There was practically no factory buying, the attitude of manufacturers was that of awaiting developments.

The market of the week ended March 16 seemed reduced to lowest terms, in other words, factory buying interest was practically absent because of the fluctuations and downward trend of prices induced by conflicting rumors. The purchases by consumers were few and confined to actual current manufacturing needs.

The market conditions for the week ended March 24 were practically a repetition of that of the week previous. Spot closing at 27⅜ cents.

Paras were very quiet and neglected. Balatas were equally dull and inactive.

Importations of all grades in February were 29,445 tons, compared with 27,410 tons one year ago. Plantation arrivals for February were 27,852 tons, compared with 25,326 tons one year ago. Total importations of plantation rubber for two months ended February 29 were 71,520 tons, compared with 67,972 tons for the corresponding period of 1927. Total importations of all grades of rubber for two months ended February 29 were 75,688 tons, compared with 73,371 tons for the corresponding period of 1927.

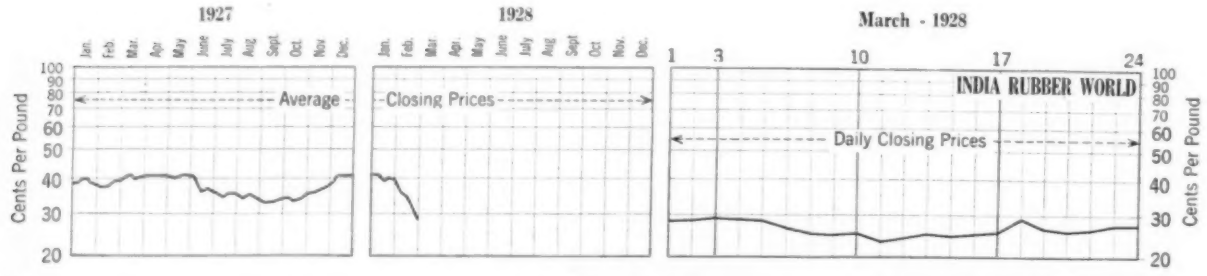
RUBBER AFLOAT TO THE UNITED STATES

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Totals Long Tons
Feb. 25.....	6,147	613	1,664	240	8,664
Mar. 3.....	3,865	618	1,576	1,756	7,815
Mar. 10.....	4,789	685	1,376	1,951	8,801
Mar. 17.....	3,981	487	1,463	1,856	7,787
Mar. 24.....	4,253	409	1,266	2,323	8,251

London

The March market opened firm with prices easy and spot unchanged at 13⅞ pence. During the interval covering the four weeks ended March 24 the tone of the market was generally dull

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	February, 1928			March, 1928																			
	27	28	29	1	2	3	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	24
PLANTATIONS																								
Sheet																								
Ribbed smoked	28¾	28⅝	29⅛	28⅝	28⅞	29⅛	28⅞	28⅝	26½	25⅜	25⅜	25⅜	23¾	24¼	25⅜	24⅝	25⅛	25½	28⅜	26⅜	25⅞	26⅜	27⅛	27⅛
Crepe																								
First Latex	29	28⅞	29⅛	28⅞	29⅛	29½	29¼	28¾	26¾	25⅝	25⅛	25⅝	24	24⅝	25¼	24⅞	25½	25¼	28¼	26¾	26⅛	26⅝	27⅝	27⅝
No. 2 blanket	27⅛	27⅛	27⅛	27	27⅜	27⅝	27⅛	26⅛	24⅞	23⅝	23¼	23¼	21⅞	22½	23⅛	22¾	23⅛	23¾	26⅞	24¾	24	24¾	25⅝	25½
No. 3 blanket	26⅜	26⅜	26⅛	26¼	26⅜	26¾	26⅜	26	24	22⅞	22⅜	22½	21⅛	21¾	22⅝	21⅞	22⅛	22⅝	26	24	23⅛	24¼	24⅞	24¾
No. 4 blanket	25½	25¾	25½	25¾	25¾	25⅞	25⅝	25¼	23⅜	22	21⅝	21⅝	20½	21	21⅞	21⅜	21¾	22⅛	25⅜	23⅛	22⅜	23¾	24¼	24¼
Thin clean brown	26⅜	26¼	26	26¼	26⅜	26½	26⅛	25⅞	24	22⅞	22¼	22⅜	21⅛	21⅝	22½	21⅞	22¼	22½	25⅞	23⅞	23	23⅞	24½	24⅝
Rolled brown	22¾	23⅛	24	23⅛	23⅞	23⅞	23¾	23⅝	22	20⅜	20¼	20¼	18¼	19	20	19¼	20	19⅞	22⅞	21⅞	20⅞	21¾	22¼	22⅛
Off latex	28½	28⅝	29	28⅝	28¾	29⅛	28¾	28⅜	26⅜	25⅜	25⅛	25¼	23⅝	24¼	25¼	24⅝	25⅛	25⅜	28⅜	26½	25¾	26⅜	27⅛	27⅜

with prices weak and declining up to March 11 when spot price was 11¾ pence, buyers. Since that date a slow upward reaction carried the price to 12¼ pence on March 23.

In regard to the cause of this decline Symington & Sinclair, London, expressed the opinion early in March that it is not to be sought in any change of statistical position nor in any fresh announcement either official or unofficial, but is accounted for by widespread doubt as to the recommendations of the Committee of Civil Research. This committee is now taking evidence for the report to the Cabinet. It has since been announced that the Commercial Committee of the House of Commons is also to examine the rubber question.

The Committee of Civil Research

The Parliamentary correspondent of the *Times*, London, Feb. 10, gives the following information concerning the committee:

It is understood that the inquiry which the Committee of Civil Research is to conduct will not be begun for about three weeks. The constitution of the committee, of which Lord Balfour, as Lord President of the Council, is the chairman, varies with each inquiry that is held. It is the general rule for a Minister to act as chairman, if Lord Balfour is absent, but for the most part the other members consist of government servants and outside representatives. The personnel of the committee which is to undertake the inquiry is not complete, but it is intended that it shall include a representative of the business world.

Invitations will be extended to those with an intimate knowledge of the rubber industry both as growers and merchants to give oral evidence before the committee, and this process must naturally take some little time. The committee presents its report direct to the Cabinet, and until the inquiry has been held it is impossible to say whether the report will be made public.

The weekly record of London stocks since January 21, is as follows: January 28, 66,285 tons; February 4, 65,969 tons; February 11, 64,945 tons; February 18, 63,769 tons; February 25, 63,103 tons; March 3, 61,978 tons; March 10, 61,920 tons; March 17, 61,033 tons; March 24, 61,000 tons.

Singapore

The market passed through essentially the same series of conditions that marked its course in London and New York, declining from 13¾ pence for spot on March 1 to 10⅝ pence on March 13. Thereafter the price gained in firmness and with some fluctuations reached 12¾ pence on March 22.

The following quotations from the local press are of interest:

The *Straits Times*, always a stalwart champion of restriction, advises calmness, declaring that if restriction goes it will be a long time dying.

The *Free Press* hopes that the committee will not report too hastily, and expresses pessimism as to the possibility of reaching any agreement with the Dutch. Not so the *Malay Mail*. This Kuala Lumpur organ suggests that the Dutch attitude might undergo a great change once it were seen that Malaya and Ceylon were unprepared to control exports without Dutch cooperation, for a heavy slump would hit the Dutch planters as hard as the British. Meantime, it advises producers to place as little rubber as possible on the market to safeguard it against an American effort to smash prices.

The general belief in Ceylon, as reported from Colombo, is that the restriction on rubber will be taken off in 1929.

Plantation Rubber Exports from Malaya*

	January 1 to January 31, 1928		
	From Singapore Tons	From Penang Tons	From Malacca Tons
To United Kingdom	360.69	562.91	376.30
British Possessions	154.77	5.00	.....
Continent of Europe	660.80	73.67	171.11
United States	15,012.35	2,534.49	773.09
Japan	809.00	119.50	141.00
Other Countries	5.83	.....	.....
Totals	17,003.44	3,295.57	1,461.50

* Excluding all foreign transhipment.

New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago and Mar. 26 the current date:

Plantation Hevea	March 26, 1927	February 26, 1928	March 26, 1928
Rubber Latex (Hevea)..gal.	$1.50 @	$1.50 @	$1.50 @
CREPE			
First latex, spot	.41¼@	.28½@	.28 @
March	.41¼@	.28½@.28¾	.28 @
April-June	.42¼@	.28¾@	.28½@
July-September	.43 @	.29 @	.29 @
October-December	.44 @	@	.29½@
Off latex, spot	.41¼@	.28 @	.27¾@
Amber No. 2, spot	.39 @	.25½@	.26 @
March	.39 @	.25½@.25¾	.26 @
April-June	.39¼@	.25¾@.26	.26½@
July-September	@	.26 @	.26¾@
October-December	@	@	.27¼@
Amber No. 3, spot	.39 @	.25 @	.25½@
Brown, thin, clean	.39 @	.25 @	.25 @
Brown specky	.38 @	.24½@	.24½@
Brown, roll	.35 @	.23¾@	.22 @
Sole crepe	@	@	@
Sheet			
Ribbed, smoked spot	.41½@.41¾	.28¼@	.27⅝@
March	.41½@	.28¼@.28½	.27⅝@
April-June	.42 @	.28½@	.28 @
July-September	@	.28¾@	.28½@
October-December	.44 @	@	.29 @
East Indian			
PONTIANAK			
Banjermassin	.10 @	.10 @.10¼	.09 @.10
Pressed block	.15 @	.14⅞@.15	.14¼@.15
Sarawak	.10 @	.10 @	.10 @
South American			
PARAS			
Upriver, fine	.33½@	.24 @	.24¼@
Upriver, fine	*.44 @	*.28½@	*.32½@.33½
Upriver, medium	.29 @	.23 @	.21 @
Upriver, coarse	.25 @	.20½@	.19¾@
Upriver, coarse	*.38 @	@	*.27 @.28
Islands, fine	.30 @	@	.22 @
Islands, fine	*.43 @	*.34 @	*.31 @.32
Acre, Bolivian, fine	.44½@	.25 @	.24¾@
Acre, Bolivian, fine	*.44½@	*.34½@	*.33 @.34
Beni, Bolivian	.45 @	.26 @	.25½@
Madeira, fine	.44 @	.25 @	.24¼@
Peruvian, fine	.43 @	.24 @	.22¾@
Tapajos, fine	.41 @	.23½@	.22¾@
CAUCHO			
Upper Caucho ball	.28 @	.20½@	.19 @
Upper Caucho ball	*.39 @	*.30 @	.27 @.28
Lower Caucho ball	.25 @	.19½@	.18½@
Maniçobas			
Ceará negro heads	@	†.18 @	†.18 @
Ceará scrap	@	†.10 @	†.10 @
Maniçoba, 30% guaranteed	@	†.20 @	†.20 @
Mangabiera, thin sheet	@	†.20 @	†.20 @
Centrals			
Central scrap	.26½@	.18 @.18½	.19 @
Central wet sheet	.20 @	@	.17 @
Corinto scrap	.26½@	.18 @.18½	.19 @
Esmeralda sausage	.26 @	.18 @.18½	.19 @
Guayule			
Duro, washed and dried	.33 @	†.28½@	.25 @
Gutta Percha			
Gutta Siak	.23 @	.20 @.20¼	.19½@.20
Gutta Soh	.45 @	.36 @	.37 @
Gutta Macassar	3.00 @	2.80 @ 3.00	3.00 @3.10
Balata			
Block, Ciudad Bolivar	.37 @	.44 @.45	.40 @.42
Colombia	.37 @	.41 @.42	.42 @
Manaos block	.40 @	.45 @.46	.43 @
Panama	@	.41 @	.41 @
Surinam, sheet	.66 @	.54 @	.54 @.55
Amber	.70 @	.57 @	.57 @.58
Chicle			
Honduras	‡.56 @	‡.65 @	‡.65 @
Yucatan, fine	‡.56 @	‡.65 @	‡.65 @

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Low and High New York Spot Prices

	1928*	March 1927	1926
PLANTATIONS			
First latex crepe	$0.24¼@$0.29½	$0.40 @$0.42½	$0.53½@$0.64
Smoked sheet, ribbed	.24 @ .29½	.39½@ .42¼	.52¾@ .63
PARAS			
Upriver, fine	.21¾@ .25¼	.32 @ .35	.44 @ .59½
Upriver, coarse	.16¾@ .21	.24½@ .27¼	.35 @ .45
Islands, fine	.....	.28½@ .31¼	.40 @ .54

*Figured to March 24, 1928.

Reclaimed Rubber Market

Reclaiming plants are operating at approximately their capacity output. Notwithstanding the lower prices prevailing for crude rubber no diminution is noticeable in the demand for reclaim, and its use by and large, is growing in volume. Certain lines, as for example, popularly priced tires, could scarcely be made of equal quality without reclaim. There are two practical advantages always on the side of reclaim. It affords the best technical value at the lowest volume cost, and it can be utilized to average down the price of crude rubber at high prices.

New York Quotations

March 26, 1928

	Specific Gravity	Price Per Pound
Auto Tire		
Black	1.21	$0.08 @$0.08½
Black, washed	1.18	.10 @ .10½
Black selected tires	1.18	.08½ @ .08¾
Dark gray	1.35	.11 @ .11½
Light gray	1.38	.12½ @ .13
White	1.40	.14½ @ .15
High Tensile		
Super-reclaim, No. 1 black	1.20	.15¾ @ .16
No. 2 black	1.20	.13 @ .13½
High tensile red	1.20	.15¼ @ .15¾
Shoe		
Unwashed	1.60	.07⅜ @ .08
Washed	1.50	.10 @ .10½
Tube		
No. 1	1.00	.16 @ .16½
No. 2	1.10	.13 @ .13½
Miscellaneous		
Red	1.35	.14 @ .14½
Truck tire, heavy gravity	1.55	.07½ @ .07¾
Truck tire, light gravity	1.40	.08 @ .08¼
Mechanical blends	1.60	.07 @ .08

Ceylon Rubber Exports

January 1 to December 31, 1927

	Tons
To United Kingdom	15,470.74
Continent	3,155.05
Australia	1,617.66
America	34,804.00
Egypt	10.00
Africa	96.73
India	28.71
Japan	170.83
Other countries in Asia	2.05
Total	55,355.77
For the same period last year	58,799.56

ANNUAL EXPORTS 1921-1926

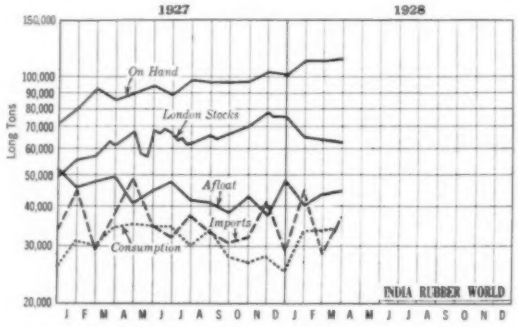
	Tons
For the year 1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14
1921	40,210.31

U. S. Rubber Co.

YOUNG FLOWERS OF THE HEVEA RUBBER TREE GROUPED BETWEEN OLD AND NEW LEAVES.

Imports, Consumption and Stocks

The accompanying graph covers the crude rubber importation, consumption and stocks for 1925, 1926, 1927, and the first three months of 1928. Stocks on hand are slowly gaining and are now about 111,000 tons. Stocks afloat have exceeded 41,000 tons each month so far this year and are placed at 45,000 tons in the estimate for March. February imports were about 3,500 tons less than estimated. Imports in March are placed at 38,000 or 8,500 tons



U. S. Imports, Consumption and Stocks

above the imports of February. London stocks declined about 2,000 tons between February 25 and March 17. Since December of last year London stocks have declined over 10,000 tons and are estimated now at about 61,000 tons.

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

			Stocks			
1925	Imports Tons	Consumption Tons	On Hand† Tons	Afloat† Tons	London Tons	Singapore and Penang Tons†
Twelve months.	384,837	389,136	51,000*	48,000*	.....	.....
1926						
Twelve months.	411,900	358,415	72,510*	52,019*	.....	.....
1927						
Twelve months.	.....	439,034	369,747	47,939	63,207	25,868
1928						
January	46,200	34,403	110,114	41,256	66,285	25,868
February	29,445	33,703	108,955	43,316	62,500	22,867
March (est.)...	38,000	35,000	111,000	45,000	61,000	.....

*December 31.
†The first of each month.

British Malaya

RUBBER EXPORTS

An official cablegram from Singapore to the Malay State Information Agency, Malaya House, 57, Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya in February last totaled 28,813 tons. The amount of rubber imported was 12,911 tons, of which 9,997 tons were declared as wet rubber. The following are comparative statistics:

	1927		1928	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Exports Tons
January	34,946	14,995	27,731	16,618
February	27,528	11,697	28,813	12,911
Totals	62,474	26,692	56,544	29,529

Note—The above figures represent the totals compiled from declarations received up to the last day of the month for exports from and imports to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of January and February, 1928:

	January, 1928 Tons	February, 1928 Tons
United Kingdom	3,588	5,743
United States	21,331	19,842
Continent of Europe	1,412	1,209
British Possessions	284	544
Japan	1,109	1,454
Other foreign countries	7	21
Totals	27,731	28,813

Compounding Ingredients Market

AT the present time tire production is at capacity output, production in the Akron district is approximately 150,000 tires daily. All other divisions of the industry are operating at fair volume except footwear, which is seasonally dull. The demand for compounding ingredients continues very active in all departments.

ACCELERATORS. The list of low temperature accelerators has been enlarged by the addition of Aero-X. The tendency to adopt low temperature cures where feasible has notably increased the use of ultra-accelerators.

Most factories utilize for their work some ultra-accelerator as well as one less active for general purposes. The demand runs heavier for this medium speed accelerator than for the high powered sorts.

ANTI-OXIDANTS. New varieties of anti-oxidants appear at intervals. They all are meritorious in that they effectually extend the life of rubber goods. Some of them function both as accelerators and anti-oxidants.

BENZOL. Output has for some time past been somewhat curtailed. The supply and demand are now well balanced. Active demand has caused an advance in the pure and commercial grades both in tanks and drums.

CARBON BLACK. Prices are firm at 7 cents, at works. Spot moved up one cent a pound late in February. The demand from the rubber trade is steady and of large volume.

CLAY. The demand for clay as one of the indispensable cheap ingredients is in some instances taxing the grinding capacity of mills producing the rubber grades.

DEGRAS. The demand is fair and prices are close to cost.

LITHARGE. Sales early in the month did not amount to heavy volume. The price was reduced ¼-cent per pound and buying was on a hand-to-mouth basis.

LITHOPONE. General trade in lithopone showed good movement the past month with active demand by the rubber industry.

MINERAL RUBBER. The consumption of mineral rubber continues at the high rate established last year although the low prices of reclaim tend to check temporarily increase in M. R.

SOLVENT NAPHTHA. The position of solvent naphtha has become somewhat competitive. The price is reduced to 30 cents per gallon.

STEARIC ACID. There is a steady contract movement and more interest on the part of the rubber industry in this material.

ZINC OXIDE. General sales are reported to be less active, but the rubber demand is strong.

Accelerators, Inorganic

Lead, carbonate	lb.	$0.08½	@
Lead, red	lb.	.09½	@
sublimed white	lb.	.07¾	@
sublimed blue	lb.	.07¾	@
super-sublimed white lead	lb.	.08¼	@
Lime, R. M. hydrated	ton	12.50	@
Litharge	lb.	.08½	@
Magnesia cal., light	lb.		@
calcined, extra light	lb.	75.00	@
calcined, heavy	ton		@
magnesium, carb., light	lb.		@
Orange mineral A.A.A	lb.	.11½	@

Accelerators, Organic

A-7	lb.	.65	@	.85
A-11	lb.	.70	@	.90
A-16	lb.	.65	@	.85
A-19	lb.	.70	@	.90
A-20	lb.	.64	@	.80
Aldehyde ammonia	lb.	.65	@	.70
B. B.	lb.		@	
Captax	lb.		@	
Crylene, hard form	lb.		@	
Paste	lb.		@	
Di-ortho-tolylguanidine	lb.	.80	@	.85
Diphenyl guanidine	lb.	.64	@	.68
Ethylidine aniline	lb.	.60	@	.65
Formaldehyde aniline	lb.	.36	@	.38
Grasselerator 102	lb.	.62½	@	.67½
552	lb.	4.45	@	
808	lb.	1.05	@	1.35
833	lb.	1.55	@	1.75
Heptene	lb.	.55	@	
Hexamethylene tetramine	lb.	.62½	@	.67½
Methylene dianiline	lb.	.37	@	
Monex	lb.		@	
No. 999 lead oleate	lb.	.15	@	
Piperidine pentamethylene dithio carbamate	lb.	4.45	@	4.60
Plastone	lb.	.36	@	
R. & H. 40	lb.	.50	@	.55
50	lb.	.50	@	.55
Safex	lb.		@	
Super-sulphur, No. 1	lb.		@	
No. 2	lb.		@	
Tensilac No. 39	lb.	.55	@	.60
No. 41	lb.	.65	@	.70
Thermlo F	lb.	.50	@	.55
Thionex	lb.	3.25	@	
Thiocarbanilid	lb.	.23	@	.26½
Trimene	lb.		@	
base	lb.		@	
Triphenylguanidine	lb.	.65	@	.70
Tuads	lb.		@	
Vulcanex	lb.	.70	@	
Vulcanol	lb.	1.03	@	
Vulcone	lb.	.70	@	
ZBX	lb.	2.50	@	
Z-88	lb.	.75	@	1.00
Zimate	lb.		@	

New York Quotations

March 26, 1928

Acids

Acetic 28% (bbls.)	100 lbs.	$3.37½	@$3.62½
glacial (carboys)	100 lbs.	12.41	@12.66
Sulphuric, 66°	100 lbs.	1.60	@

Alkalies

Caustic soda, solid	lb.	.02¾	@ .03

Anti-Oxidants

Age-Rite, powder	lb.		@	
resin	lb.		@	
Antox	lb.		@	
Neozone	lb.	.74	@	
Oxynone	lb.	.68	@	.90
Resistox	lb.	.60	@	.70
Stabilite	lb.	.65	@	
V. G. B	lb.		@	

Colors

BLACK

Bone	lb.	.07¾	@
Carbon (see Comp. Ing.)			
A. & W. nonfl No. 1	lb.	.40	@
Drop	lb.	.06	@ .10
Lampblack (commercial)	lb.	.09	@

BLUE

A. & W. blue	lb.	1.25	@ 5.00
Du Pont, N	100 lbs.	1.35	@
Marine, A. C	100 lbs.	1.30	@
5 R.	100 lbs.	1.00	@
2 G.	100 lbs.	.90	@
Huber Brilliant	lb.	4.20	@
Prussian	lb.	.31	@ .35
Ultramarine	lb.	.10	@ .30

BROWN

Huber Mocha	lb.	1.60	@
Sienna, Italian, raw	lb.	.05	@ .12½

GREEN

A. & W. green	lb.	1.25	@ 3.00
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
dark	lb.	.30	@ .33
Du Pont, A. C	100 lbs.	3.00	@
4 G.	100 lbs.	.60	@
G. L.	100 lbs.	.30	@
Y. L.	100 lbs.	.75	@
Huber Brilliant	lb.	3.85	@
Oxide of chromium	lb.	.27	@ .38

ORANGE

Du Pont, 2 R	100 lbs.	1.40	@
R. X.	100 lbs.	1.30	@
Y. O.	100 lbs.	1.60	@
Huber Persian	lb.	.50	@

Colors—*(Continued)*

RED

A. & W. red	lb.	$0.75	@	$3.50
purple	lb.	2.00	@	4.00
Antimony, golden, No. 40	lb.		@	
No. 60	lb.		@	
golden 15/17%	lb	.22	@	.25
Aristi	lb.	1.85	@	2.00
Huber Brilliant	lb.	1.35	@	

Antimony

Crimson, R.M.P. No. 3	lb.	.50	@	
Sulphur free	lb.	.50	@	.60
7-A.	lb.	.35	@	
Z-2	lb.	.22	@	
Vermilion, No. 5	lb.		@	
No. 15	lb.		@	
Du Pont, R. I	100 lbs.	1.75	@	
6 B.	100 lbs.	.90	@	
Brilliant A. C	100 lbs.	.90	@	

Iron Oxides

bright pure domestic	lb.	.12	@	
bright pure English	lb.	.13	@	
bright reduced English	lb.	.09	@	
bright reduced domestic	lb.	.10	@	
Indian (maroon), pure domestic	lb.	.11	@	
Indian (maroon), pure English	lb.	.10½	@	.12
Indian (maroon), reduced English	lb.	.08	@	.09
Indian (maroon), reduced domestic	lb.	.08	@	
Oximony	lb.	.13¼	@	
Spanish red oxide	lb.	.03	@	.04¼
Venetian reds	lb.	.02	@	.06
Vermilion, Eng. quicksilver	lb.	1.80	@	

WHITE

Lithopone	lb.	.05¾	@	.05¾
Azolith	lb.	.05¼	@	.05¾
Grasselli	lb.	.05¼	@	.05¾
Sterling	lb.		@	
Titanox	lb.	.10	@	.10½
Zinc Oxide				
AAA (lead free)	lb.	.07	@	
Azo (factory):				
ZZZ (lead free)	lb.	.06½	@	.07
ZZ (leaded)	lb.	.06⅓	@	.06⅔
Z (8% leaded)	lb.	.06⅓	@	.06⅔
French Process				
Green seal	lb.	.10⅓	@	
Red seal	lb.	.09⅔	@	
White seal	lb.	.11⅓	@	

YELLOW

A. & W. yellow	lb.	2.00	@	4.00
Cadmium sulphide	lb.	1.35	@	2.00
Chrome	lb.	.16	@	.17
Du Pont N	100 lbs.	4.00	@	
R. W.	100 lbs.	.78	@	
Grasselli cadmium	lb.		@	
Huber Canary	lb.	3.30	@	
Ochre, domestic	lb.	.01¾	@	.02¼
Oxide, pure	lb.	.09	@	
Zinc imported	lb.	.22	@	

New York Quotations

March 26, 1928

Compounding Ingredients

Aluminum flake (sacks e.l.)	ton	$21.85	@
(sacks l.c.l.)	ton	24.50	@
Ammonium carbonate powd.	lb.	.11½	@
lump	lb.	.12	@
Asbestine	ton	13.40	@14.50
Barium, carbonate	ton	47.50	@50.00
Barytes, imported	ton	27.00	@34.00
dry ground, white	ton	35.00	@
dry ground, off color	ton	25.00	@
No. 1 Missouri, water ground and floated, St. Louis	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04¼	@
pulp	ton	50.00	@
Carbon Black			
Aerfloted arrow	lb.	.08 @	.12
Compressed	lb.	.07½ @	.11½
Uncompressed	lb.	.07 @	.11
Micronex	lb.	.08 @	.12
Carrara filler	ton	20.00	@
Chalk, precipitated	lb.	.04¼ @	.04¾
Clay, Blue Ridge, dark	ton		@
Blue Ridge, light	ton		@
China	lb.	.01½	@
Dixie	ton		@
Langford	ton		@
Mineral flour (Florida)	ton		@
Perfection	ton	14.00	@
Suprex	ton		@
Cotton flock, black	lb.	.10 @	.11
light-colored	lb.	.09 @	.10½
white	lb.	.10 @	.26
Glue, high grade	lb.	.24 @	.28
low grade	lb.	.21 @	.25
Infusorial earth	lb.	.02½ @	.03½
Mica, amber (fact'y)	ton	12.00	@
Pumice stone, powd.	lb.	.02½ @	.04
Rotten stone (bbls.)	lb.	.02½ @	.04½
Soap bark	lb.	.15 @	.16
Soapstone	ton	15.00	@22.00
Talc, domestic	ton	18.00	@25.00
French	ton	18.00	@22.00
Pyrax A	ton		@
B	ton		@
Thermatomic carbon	lb.		@
Velvetex	lb.	.04 @	.07

Compounding Ingredients—*(Continued)*

Whiting:			
Commercial	100 lbs.	$0.85	@$1.00
English, cliffstone	100 lbs.	1.50	@
Quaker	ton		@
Snow white	ton		@
Sussex	ton		@
Westminster Brand	100 lbs.		@
Witco (e.l.) (fact'y)	ton		@
Whiting, imp. chalk	100 lbs.	1.00	@ 1.25
Paris White, Eng. Cliff	100 lbs.	1.50	@ 3.00

Factice—See Rubber Substitutes

Mineral Rubber

Fluxrite (solid)	lb.	.05¼ @	.06
Genasco (fact'y)	ton	50.00	@52.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Hydrocarbon, soft	ton		@
Ohmlac Kapak, M. R.	ton	40.00	@90.00
M-4	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granulated	ton	52.00	@54.00
Robertson, M. R., solid (fact'y)	ton	34.00	@80.00
M. R. gran. (fact'y)	ton	38.00	@80.00

Oils

Mineral	gal.	.18	@
Kerosene	gal.	.15	@
Rapeseed	gal.	.90	@
Red oil, distilled	lb.	.09¾ @	.10¼
Rubber process	gal.	.20	@
Spindle	gal.	.22	@

Rubber Substitutes or Factice

Black	lb.	.08 @	.14
Brown	lb.	.08 @	.15
White	lb.	.09 @	.16

Softeners

Burgundy pitch	100 lbs.	5.00	@ 6.25
Atlas	100 lbs.	6.50	@
Corn oil	lb.	.11	@
Cotton oil	lb.	.10½	@
Cycline oil	gal.	.28	@ .33
Degras	lb.	.03¾	@ .04½
Fluxrite (fluid)	lb.	.05	@ .06
Hexalin	lb.	.60	@
acetate	lb.	.70	@
Moldrite	lb.	.07½	@
Palm oil (Lagos)	lb.	.09½	@
Palm oil (Niger)	lb.	.08½	@
Palm oil (Witco)	lb.	.08½	@
Para-flux	gal.	.17	@

Softeners—*(Continued)*

Petrolatum, snow white	lb.	$0.09¼ @	$0.09½
Pigmentar	gal.	.33 @	.38
Pine oil, steam distilled	gal.	.68 @	.70
Rosin K	bbl.	9.65 @	
Rosin oil, compounded	gal.	.36 @	
deodorized	gal.	.58 @	
No. 556	gal.	.47 @	
Rubtack	lb.	.08½ @	
Shellac, orange	lb.	.70 @	
Stearex	lb.	.10 @	.14
Stearic acid, double press'd.	lb.	.11¾ @	.12¾
Tackol	lb.	.09 @	.15
Tar (retort)	bbl.		

Solvents

Benzol (90%, 7.21 lbs. gal.)	gal.	.27 @	.28
Carbon bisulphide (99.9%, 10.81 lbs. gal.) (drums)	lb.	.05 @	.06
tetrachloride (99.7%, 13.28 lbs. gal.) (drums)	lb.	.07½ @	.08
Gasoline			
No. 303			
Tankcars	gal.	.14 @	
Drums, c. l.	gal.	.25 @	
Drums, l. c. l.	gal.	.27 @	
Dip-Sol	gal.	.11½ @	
Rubberlene	gal.	.10 @	
Rub-Sol	gal.	.09 @	
Solvent naphtha	gal.	.35 @	
Sweet rubber cement naphtha	gal.	.15 @	
Turpentine, Venice	lb.	.20 @	
steam distilled	gal.	.57 @	.58

Vulcanizing Ingredients

Sulphur			
Velvet flour (240 lb. bbls.)	100 lbs.	2.95 @	3.50
(150 lb. bags)	100 lbs.	2.60 @	3.15
Soft rubber (e.l.)	100 lbs.	2.40 @	2.75
(l.c.l.)	100 lbs.	@	
Superfine commercial flour (210 lb. bbls.)	100 lbs.	2.55 @	3.10
(100 lb. bags)	100 lbs.	2.20 @	2.80
Tire brand, superfine	100 lbs.	1.90 @	2.25
Tube brand, velvet	100 lbs.	2.40 @	2.75
Vandex	lb.	@	
(See also Colors—Antimony)			

Waxes

Beeswax, white, com	lb.	.55 @	
carnauba	lb.	.33 @	.60
ceresine, white	lb.	.12 @	
montan	lb.	.07½ @	
ozokerite, black	lb.	.27 @	
green	lb.	.28 @	
Paraffin			
122/124 white crude scale	lb.	.03 @	
124/126 white crude scale	lb.	.03¼ @	
120/122 fully refined	lb.	.05¾ @	
125/127 fully refined	lb.	.06 @	

WHY WHITE RUBBER DARKENS

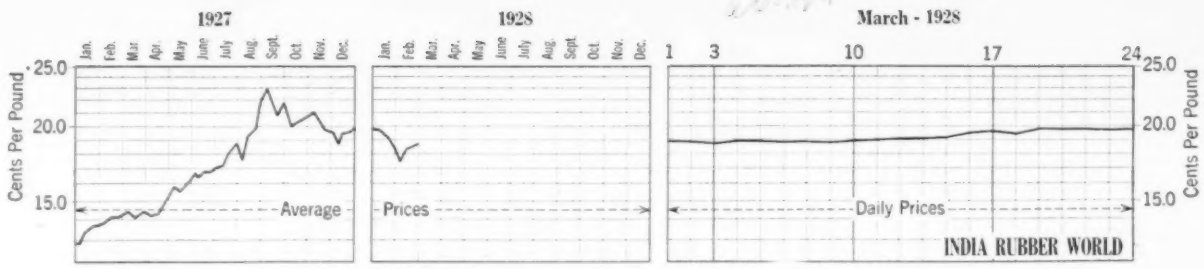
The cause of some white rubber goods becoming slate gray or nearly black when exposed to sunlight, and then recovering their whiteness after removal from such light, was explained by P. G. Nagle at a recent meeting of the Institution of the Rubber Industry in Liverpool. He attributed such darkening to the action of the actinic rays of the sun on some kinds of sensitive lithopone in the rubber. Incidentally the chairman's white tennis shoes served "to adorn a tale" if not to point a moral. Every afternoon, he said, they became nearly black, but every night they changed back to white again; and he wanted to know the reason. Here, it was explained, that not only a certain kind of lithopone could be blamed but that humidity was an accessory before the fact.

On this occasion Mr. Nagle demonstrated the value of testing with the mercury vapor lamp and Chance's screen lithopones, zinc and titanium oxides and other pigments for white rubber goods to make sure that the fillers were sunproof. The lamp is also used as a "fugitometer" in testing the fastness of dyes in rubber goods; as an aid in the Geer oven test for rapid artificial aging; and for the examination of mixed rubbers and finished goods. In a symposium that followed it was held that the darkening of lithopone is due to impurities, the c. p. samples that registered a clear violet in the spectrum having also showed marked resistance to change in sunlight.

RUBBER GHOSTS AWE AT SEANCES

Rubber plays, or can play, it is said, a very effective role at spiritistic seances. One of the most bewildering manifestations to even critical sitters-in has been the appearance in the dark room of a phantom head and face claimed by the medium to belong to her "control" and to issue from her body as an ethereal substance or ectoplasm. The mystery is heightened by the spectral figure vaguely answering questions put to it by the medium at the sitters' requests. Skeptical magicians claim that the materialized figures are very material, in fact, are of rubber, and they point to the fact that photographs taken of the ghostly faces show no changes of feature throughout a whole performance, although the "vision" is supposed to feel emotion and does "speak" considerably.

The so-called phenomenon, they say, can be duplicated by molding such heads somewhat as rubber toy balloons are made on wooden balls. A varnished plaster of paris cast is dipped repeatedly into a rubber solution until a pellicle forms of sufficient thickness, an air valve is attached, the head is inflated, coated with luminous paint, and touched up by an artist until it is quite life-like. The distensible "control" collapsed is easily hidden, and when it is called for the rubber head is blown up, a cloth covering is removed, and the eerie figure glows awesomely in the darkness. It "talks" when held before the medium's mouth, or through the aid of ventriloquism.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

Market for Cotton and Fabrics

AMERICAN COTTON. The price for middling spot cotton on March 1 was 18.95 cents as compared with 17.75 cents on February 1. The steady rise in February was continued in March. On the 12th of the month it reached 19.00 cents and on the 24th was at 19.85 cents.

Final ginning reports place the size of last year's crop at 12,950,000 bales of 500 pounds. Advancing prices will tend to increase the acreage planted for the new crop. The start is not yet favorable because the season is late and cold and farm work generally backward in starting.

EGYPTIAN COTTON. The recent feature of the extra staple market has been the sharp advance in Egyptians. Sakels have been particularly strong. There is no telling to what point they may advance under the notoriously wild Egyptian speculation. There is no doubt that the recent Egyptian crop is turning out to be smaller than anticipated. It is also true that the Soudan crop will probably be somewhat smaller than anticipated. If Egypt succeeds in raising a normal crop this year there will be no shortage of 1½ inch cotton for at least 18 months, therefore it is all a question as to what price will induce holders to sell.

Compared to Egyptians, American staples are now cheap and already spinners are taking advantage of this fact. Whether American staples will advance or Egyptians decline can not now be foreseen. On general principles the latter is the more probable outcome.

ARIZONA COTTON. Arizona Pimas are practically exhausted and it is too early yet to predict what quantity of this cotton will be planted this year. Sales of seed thus far do not indicate any increase in acreage for 1928.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market on heavy yarn fabrics continues sufficiently active to take up specialty fabric production. Advance in the staple is carrying prices of cloths higher. It appears likely that there will be a strong cotton market during the balance of the cotton year, with prices of fabrics more in keeping with producing costs than has been the case in recent months.

SHEETINGS. The market has been fairly brisk and prices firm. Following the rise in the price of raw cotton inquiry on standard constructions has increased considerably. At the same time sales have been made only in medium size lots for prompt or nearby delivery. Some mills want an advance over spot prices for future deliveries and others will concede a reduction. Prices appear very firm but even with the advance in raw cotton prices it has been difficult to raise the market on gray goods.

TIRE FABRICS. In the past month conditions have changed somewhat, apparently due to the drop in the price of crude rubber. Tire manufacturers are slightly hesitant about crowding production and there have been some light deferments of tire fabric deliveries. Continuance of orders for fabric not already placed is certain later in the season if prices are stabilized.

New York Quotations

March 26, 1928

Drills

38-inch 2.00-yard	*yard*	$0.17 @
40-inch 3.47-yard		.09⅞ @
50-inch 1.52-yard		.22⅜ @
52-inch 1.90-yard		.18⅛ @
52-inch 2.20-yard		.15⅝ @
59-inch 1.85-yard		.18¾ @

Ducks

38-inch 2.00-yard S. F.	*yard*	.17¼ @
40-inch 1.45-yard S. F.		.23¾ @
72-inch 1.05-yard D. F.		.33⅞ @
72-inch 16.66-ounce		.36⅜ @
72-inch 17.21-ounce		.37⅝ @
MECHANICAL		
Hose and belting	*pound*	.34½ @
Specials		.38½ @
TENNIS		
52-inch 1.35-yard	*yard*	.25⅞ @

Hollands

RUBBER TRADE SPECIAL R. T. 3 A.		
31-inch	*yard*	.20 @
40-inch		.25 @
50-inch		.45 @
RED SEAL		
36-inch		.15½ @
40-inch		.16½ @
50-inch		.25 @
GOLD SEAL		
40-inch, No. 72		.20¾ @
40-inch, No. 80		.22 @

Osnaburgs

40-inch 2.35-yard	*yard*	$0.14⅜ @
40-inch 2.48-yard		.13¾ @
40-inch 3.00-yard		.11⅜ @
37-inch 2.42-yard		.14⅛ @

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	*yard*	.13 @
Bombazine 60 x 48		.12 @
Plaids 60 x 48		.12 @
Plaids 48 x 48		.11¼ @
Surface prints 64 x 60		.13 @
Surface prints 60 x 48		.12 @
Print cloth 38½-in., 60 x 64		.07¾ @

Sheetings, 40-inch

48 x 48, 2.50 yard	*yard*	.12¼ @ .12½
48 x 48, 2.85-yard		.10⅞ @
64 x 68, 3.15 yard		.12 @
56 x 60, 3.60-yard		.10 @
44 x 48, 3.75-yard		.08½ @

Sheetings, 36-inch

48 x 48, 5.00 yard	*yard*	.07 @
40 x 44, 6.15-yard		.05¼ @

Tire Fabrics

SQUARE WOVEN 17¼-ounce		
Egyptian, karded	*pound*	@
Peeler, karded		$0.46 @
BUILDER 23/11		
Peeler, karded	*pound*	.46 @
BUILDER 10/5		
Peeler, karded	*pound*	.42 @
CORD 23/5/3		
Egyptian, combed	*pound*	@
Egyptian, karded		@
Peeler, karded, 1 1/32-in.		.45 @
CORD 23/4/3		
Peeler, karded	*pound*	.46 @
CORD 23/3/3		
Peeler, karded	*pound*	.52 @
CORD 15/3/3		
Peeler, karded	*pound*	.43 @
CORD 13/3/3		
Peeler, karded	*pound*	.42 @
LENO BREAKER		
8-oz. Peeler, karded	*pound*	.46 @
10-oz. Peeler, karded		.46 @
CHAFER		
9.5-oz. Peeler, karded	*pound*	.54 @
12-oz. Peeler, karded		.48 @
14-oz. Peeler, karded		.46 @

United States Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	December, 1927		Twelve Months Ended December, 1927	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	68,848,381	$22,213,574	954,817,255	$339,874,774
Balata	127,982	41,141	1,303,215	477,246
Jelutong or Pontianak	764,720	60,347	17,437,943	2,448,657
Gutta percha	72,489	16,095	3,346,146	728,172
Guayule	766,875	179,448	11,174,253	2,659,325
Rubber scrap	2,347,171	94,359	21,497,456	907,450
Totals	72,927,618	$22,604,964	1,009,576,268	$347,095,624
Chicle *dutiable*	1,590,588	$783,594	12,167,071	$6,155,551
MANUFACTURED—*Dutiable*				
Rubber belting	39,593	$23,298	638,068	$389,062
Rubber tires	436	4,722	5,450	75,615
Other manufactures of rubber	.....	124,144	.....	1,406,815
Totals	40,029	$152,164	643,518	$1,871,492

EXPORTS OF FOREIGN MERCHANDISE

RUBBER MANUFACTURES				
Crude rubber	5,945,259	$2,245,754	62,215,477	$24,735,488
Balata	14,066	5,302	140,472	57,600
Gutta percha and rubber substitutes and scrap	100	70	99,765	14,776
Rubber manufactures	.....	22,931	.....	341,769
Totals	5,959,425	$2,274,057	62,455,714	$25,149,633

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
India Rubber				
Reclaimed	1,636,524	$119,268	19,130,429	$1,751,439
Scrap and old	3,505,614	219,692	31,332,132	1,946,111
Footwear				
Boots *pairs*	85,288	191,027	874,465	2,074,019
Shoes *pairs*	174,349	158,381	1,910,659	1,709,426
Canvas shoes with rubber soles *pairs*	350,870	262,544	4,789,004	3,289,492
Rubber water bottles and fountain syringes *number*	21,809	13,876	339,254	221,759
Rubber gloves *doz pairs*	6,182	21,182	76,594	242,581
Other druggists' rubber sundries	.....	35,089	.....	447,102
Bathing caps *doz.*	4,267	11,625	157,676	339,859
Hard rubber goods				
Electrical hard rubber goods	125,437	36,118	1,247,201	314,357
Other hard rubber goods	.....	36,392	.....	382,790
Tires				
Casings, automobile *number*	203,479	2,471,859	2,630,506	33,787,390
Tubes, automobile *number*	133,518	269,860	1,630,917	3,499,317
Other casings and tubes *number*	7,162	21,235	61,070	175,683
Solid tires for automobiles and motor trucks *number*	4,022	140,366	97,001	2,887,082
Others	191,021	52,686	1,764,953	435,639
Tire accessories	.....	143,465	.....	1,832,786
Rubber and friction tape	96,809	29,393	1,489,437	428,516
Belting	540,738	298,816	5,010,492	2,681,815
Hose	613,770	231,078	7,117,943	2,670,839
Packing	185,102	87,823	2,415,143	1,109,005
Soles and heels	568,441	163,434	4,921,650	1,526,263
Thread	167,500	200,882	1,526,366	1,905,524
Rubber bands and erasers	82,463	56,687	894,845	639,414
Other rubber manufactures	.....	184,307	.....	2,359,666
Totals	.....	$5,457,085	.....	$68,657,874
Rubber toys and balls	.....	$13,831	.....	$176,111
Rubber balloons *gross*	62,280	$81,193	561,540	$759,134

Crude Rubber Imports by Customs Districts

	* January, 1927		* January, 1928	
	Pounds	Value	Pounds	Value
Massachusetts	6,211,909	$2,240,518	5,659,092	$1,817,185
New York	87,760,726	33,333,513	78,452,316	27,351,021
Maryland	514,315	200,599	1,290,157	395,749
Los Angeles	1,703,752	623,164	906,153	297,214
San Francisco	706,762	280,230	70,572	22,963
Oregon	184,800	75,695	22,400	7,501
Ohio	.....	.....	1,088,403	343,631
Colorado	.....	.....	112,000	43,180
Totals	97,082,264	$36,753,719	87,601,093	$30,278,444

* Including latex, dry rubber content.

ANNUAL SAFETY CONGRESS

The Annual Safety Congress will be held in New York City the week of October 1 to 5, in the Pennsylvania, Waldorf Astoria, McAlpin, Martinique and Commodore Hotels. The Executive Committee plans to make it the best congress ever held.

Dominion of Canada Rubber Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	December, 1927		Nine Months Ended December, 1927	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc	5,156,384	$1,918,038	40,517,879	$15,063,311
Rubber recovered	711,595	61,074	6,768,908	596,882
Rubber, powdered and rubber or gutta percha scrap	572,090	37,094	5,838,544	348,137
Balata	907	444	5,588	2,664
Rubber substitutes	92,441	18,883	689,835	101,658
Totals	6,533,417	$2,035,533	53,820,754	$16,112,652
PARTLY MANUFACTURED				
Hard rubber sheets and rods	25,083	$10,846	172,117	$74,246
Hard rubber tubes	.....	416	.....	9,693
Rubber thread not covered	21,406	24,873	176,411	227,360
Totals	46,489	$36,135	348,528	$311,299
MANUFACTURED				
Belting	.....	$8,093	.....	$98,908
Hose	.....	12,102	.....	129,830
Packing	.....	4,936	.....	38,500
Boots and shoes *pairs*	22,422	45,262	101,542	179,567
Clothing, including waterproofed	.....	22,033	.....	372,468
Gloves	.....	1,000	.....	12,609
Hot water bottles	.....	4,510	.....	21,205
Tires, solid *number*	17	764	359	20,126
Tires, pneumatic *number*	555	9,202	33,537	229,261
Tires, tubes *number*	2,763	5,309	33,433	69,043
Elastic, round and flat	.....	12,524	.....	137,854
Mats and matting	.....	3,116	.....	22,523
Cement	.....	2,620	.....	66,997
Golf balls *dozen*	488	1,613	37,525	152,494
Heels, rubber *pairs*	54,473	3,575	752,207	44,807
Other rubber manufactures	.....	93,374	.....	937,933
Totals	.....	$230,033	.....	$2,534,125
Totals, rubber imports	.....	$2,301,701	.....	$18,958,076

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS

	December, 1927		Nine Months Ended December, 1927	
UNMANUFACTURED	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
Crude and waste rubber	$25,224	.....	$202,442	.....
Totals	$25,224	.....	$202,442	.....
MANUFACTURED				
Belting	$51,949	.....	$389,233	.....
Canvas shoes with rubber soles	208,503	.....	2,909,388	.....
Boots and shoes	211,403	.....	1,503,490	.....
Clothing, including waterproofed	651	.....	18,287	.....
Hose	25,850	.....	190,552	.....
Tires, casings	1,244,578	.....	11,966,314	.....
Inner tubes	215,142	.....	2,280,973	.....
Solid	29,225	.....	313,520	.....
Other rubber manufactures	71,354	$2,844	596,110	$53,805
Totals	$2,058,655	$2,844	$20,167,867	$53,805
Totals, rubber exports	$2,083,879	$2,844	$20,370,309	$53,805

London Stocks, January, 1928

	Landed Tons for Jan.	Delivered Tons for Jan.	Stocked January 31 Tons 1928	Tons 1927	Tons 1926
LONDON					
Plantation	9,010	6,267	66,378	54,785	9,865
Other grades	2	12	95	127	73
LIVERPOOL					
Plantation	518	850	†2,136	†2,071	†818
Total tons, London and Liverpool	9,530	7,129	68,609	56,983	10,756

†Official returns from the six recognized public warehouses.

AUTOMOBILE TIRES IMPORTED INTO JAPAN

The following table gives the weight and value of tires imported into Japan the first six months of 1927. A kin equals 1.33 pounds.

	Kin	Yen
United States	1,150,614	1,230,058
Canada	134,552	161,235
France	32,697	70,477
Italy	27,980	63,745
Germany	6,978	4,389
Belgium	331	457
Great Britain	23	76
Total	1,353,175	1,530,437

Crude Rubber Arrivals at New York as Reported by Importers

Plantations

	Cases
February 15. By "Atlanta City," Far East.	
H. A. Astlett & Co.	928
General Rubber Co.	6,373
The Meyer & Brown Corp. pkgs.	534
Poel & Kelly, Inc.	138
Raw Products Co.	396
Rogers Brown & Crocker Bros., Inc.	1,439
February 15. By "Forresbank," Far East.	
H. A. Astlett & Co.	979
General Rubber Co.	2,253
The Meyer & Brown Corp. pkgs.	1,672
Poel & Kelly, Inc.	592
Rogers Brown & Crocker Bros., Inc.	1,071
February 15. By "Machaon," Far East.	
General Rubber Co.	5,678
Haldane & Co., Inc.	550
The Meyer & Brown Corp. pkgs.	1,942
Poel & Kelly, Inc.	20
Raw Products Co.	275
Rogers Brown & Crocker Bros., Inc.	569
February 16. By "Newby Hall," Far East.	
H. A. Astlett & Co.	314
Baird Rubber & Trading Co., Inc.	260
Bierrie & Co., Inc.	45
Littlejohn & Co., Inc.	560
The Meyer & Brown Corp. pkgs.	240
Charles T. Wilson Co., Inc.	67
February 19. By "Breedyk," Europe.	
Littlejohn & Co., Inc.	102
February 20. By "City of Derby," Far East.	
Bierrie & Co., Inc.	112
General Rubber Co.	112
Hood Rubber Co.	*320
Littlejohn & Co., Inc.	350
Charles T. Wilson Co., Inc.	50
February 20. By "Innoko," Far East.	
Bierrie & Co., Inc.	80
February 20. By "Mahanada," Far East.	
The Meyer & Brown Corp. pkgs.	280
February 21. By "Hamburg," Europe.	
Littlejohn & Co., Inc.	70
February 23. By "Aurania," London.	
Baird Rubber & Trading Co., Inc.	67
Bierrie & Co., Inc.	273
February 23. By "Minnetonka," London.	
Baird Rubber & Trading Co., Inc.	1,418
Bierrie & Co., Inc.	205
General Rubber Co.	631
February 23. By "President Cleveland," Far East.	
H. A. Astlett & Co.	†500
February 23. By "President Harrison," Far East.	
H. A. Astlett & Co.	470
Baird Rubber & Trading Co., Inc.	2,532
Bierrie & Co., Inc.	306
General Rubber Co.	2,076
Haldane & Co., Inc.	50
Littlejohn & Co., Inc.	950
The Meyer & Brown Corp. pkgs.	2,782
Poel & Kelly, Inc.	55
Raw Products Co.	50
Rogers Brown & Crocker Bros., Inc.	100
Charles T. Wilson Co., Inc.	21
February 25. By "Stadsdyk," Far East.	
H. A. Astlett & Co.	1,906
Baird Rubber & Trading Co., Inc.	100
General Rubber Co.	4,240
Haldane & Co., Inc.	123
Littlejohn & Co., Inc.	1,732
The Meyer & Brown Corp. pkgs.	899
Poel & Kelly, Inc.	252
Raw Products Co.	63
Rogers Brown & Crocker Bros., Inc.	783
Charles T. Wilson Co., Inc.	872
February 26. By "Belfast Maru," Far East.	
H. A. Astlett & Co.	480
Baird Rubber & Trading Co., Inc.	632
Bierrie & Co., Inc.	250
General Rubber Co.	3,737
Hood Rubber Co.	*203
Littlejohn & Co., Inc.	628
The Meyer & Brown Corp. pkgs.	2,803
The Meyer & Brown Corp. pkgs.	*64
Poel & Kelly, Inc.	165
Rogers Brown & Crocker Bros., Inc.	*375
Rogers Brown & Crocker Bros., Inc.	725
Charles T. Wilson Co., Inc.	168
February 26. By "Bolivian," London.	
Baird Rubber & Trading Co., Inc.	160
Bierre & Co., Inc.	251
Hood Rubber Co.	*83
Littlejohn & Co., Inc.	1,331
The Meyer & Brown Corp. pkgs.	126
Rogers Brown & Crocker Bros., Inc.	*407
February 26. By "Grootendyk," Amsterdam.	
Bierrie & Co., Inc.	61
February 27. By "Carmania," London.	
Baird Rubber & Trading Co., Inc.	*49
Poel & Kelly, Inc.	936
February 28. By "Alaunia," London.	
Baird Rubber & Trading Co., Inc.	606
General Rubber Co.	1,031
Littlejohn & Co., Inc.	1,379
February 28. By "City of Lahore," Far East.	
H. A. Astlett & Co.	2,008
Baird Rubber & Trading Co., Inc.	712
Bierrie & Co., Inc.	100
General Rubber Co.	4,411
Haldane & Co., Inc.	230
Littlejohn & Co., Inc.	2,928
The Meyer & Brown Corp. pkgs.	3,212
The Meyer & Brown Corp. pkgs.	*50
Poel & Kelly, Inc.	605
Raw Products Co.	440
Rogers Brown & Crocker Bros., Inc.	805
February 29. By "City of Chester," Far East.	
Bierrie & Co., Inc.	324
Hood Rubber Co.	*117
Littlejohn & Co., Inc.	766
The Meyer & Brown Corp. pkgs.	50
Raw Products Co.	28
Charles T. Wilson Co., Inc.	202
February 29. By "Euryades," Far East.	
H. A. Astlett & Co.	725
Baird Rubber & Trading Co., Inc.	250
Bierrie & Co., Inc.	150
General Rubber Co.	2,075
Haldane & Co., Inc.	300
Littlejohn & Co., Inc.	1,712
The Meyer & Brown Corp. pkgs.	1,303
February 29. By "Napierian," London.	
Poel & Kelly, Inc.	*106
February 29. By "Pt. Nicholson," Europe.	
Littlejohn & Co., Inc.	1,669
March 1. By "City of Guilford," Far East.	
General Rubber Co.	80
Littlejohn & Co., Inc.	672
Rogers Brown & Crocker Bros., Inc.	109
March 1. By "London Exchange," London.	
Baird Rubber & Trading Co., Inc.	419
Littlejohn & Co., Inc.	380
The Meyer & Brown Corp. pkgs.	152
Poel & Kelly, Inc.	519
March 3. By "Silverbeech," Far East.	
H. A. Astlett & Co.	778
Baird Rubber & Trading Co., Inc.	770
General Rubber Co.	7,140
Haldane & Co., Inc.	182
Hood Rubber Co.	*593
Littlejohn & Co., Inc.	4,136
The Meyer & Brown Corp. pkgs.	996
Poel & Kelly, Inc.	415
Raw Products Co.	176
Rogers Brown & Crocker Bros., Inc.	1,146
Charles T. Wilson Co., Inc.	489
March 4. By "Jalapa," Far East.	
Bierrie & Co., Inc.	200
March 5. By "Dresden," Europe.	
Littlejohn & Co., Inc.	56
March 5. By "Minnewaska," London.	
Baird Rubber & Trading Co., Inc.	800
General Rubber Co.	590
Littlejohn & Co., Inc.	25
March 5. By "Mississippi," London.	
Baird Rubber & Trading Co., Inc.	798
Baird Rubber & Trading Co., Inc.	*189
General Rubber Co.	60
Hood Rubber Co.	*119
Littlejohn & Co., Inc.	1,136
Rogers Brown & Crocker Bros., Inc.	*251
March 6. By "Andania," London.	
Baird Rubber & Trading Co., Inc.	100
March 6. By "Cedric," Liverpool.	
Baird Rubber & Trading Co., Inc.	15
March 6. By "France Maru," Europe.	
Littlejohn & Co., Inc.	66
March 6. By "Pres. Monroe," Far East.	
H. A. Astlett & Co.	390
Baird Rubber & Trading Co., Inc.	1,250
Bierrie & Co., Inc.	100
General Rubber Co.	1,864
Haldane & Co., Inc.	620
Hood Rubber Co.	*170
Littlejohn & Co., Inc.	3,630
The Meyer & Brown Corp. pkgs.	1,362
Poel & Kelly, Inc.	300
Raw Products Co.	336
Charles T. Wilson Co., Inc.	491
March 7. By "City of Cardiff," Far East.	
Bierrie & Co., Inc.	168
General Rubber Co.	148
Haldane & Co., Inc.	250
Hood Rubber Co.	*125
Littlejohn & Co., Inc.	1,322
Charles T. Wilson Co., Inc.	243
March 7. By "Lancaster Castle," Far East.	
H. A. Astlett & Co.	935
Baird Rubber & Trading Co., Inc.	2,050
Bierrie & Co., Inc.	203
General Rubber Co.	3,619
Haldane & Co., Inc.	195
Littlejohn & Co., Inc.	2,665
The Meyer & Brown Corp. pkgs.	2,219
The Meyer & Brown Corp. pkgs.	*68
Poel & Kelly, Inc.	275
Rogers Brown & Crocker Bros., Inc.	286
Charles T. Wilson Co., Inc.	1,063
March 8. By "Javanese Prince," Far East.	
H. A. Astlett & Co.	656
Baird Rubber & Trading Co., Inc.	855
Bierrie & Co., Inc.	110
General Rubber Co.	1,588
Hood Rubber Co.	*69
Littlejohn & Co., Inc.	2,767
The Meyer & Brown Corp. pkgs.	1,218
Raw Products Co.	412
Rogers Brown & Crocker Bros., Inc.	2,065
Charles T. Wilson Co., Inc.	168
March 8. By "Manaar," Far East.	
Bierrie & Co., Inc.	140
General Rubber Co.	2,382
Haldane & Co., Inc.	50
Hood Rubber Co.	*85
Littlejohn & Co., Inc.	280
Raw Products Co.	56
Charles T. Wilson Co., Inc.	197
March 9. By "Caledonian," London.	
Baird Rubber & Trading Co., Inc.	*91
March 11. By "Krakatau," Far East.	
H. A. Astlett & Co.	522
Baird Rubber & Trading Co., Inc.	76
Bierrie & Co., Inc.	67
General Rubber Co.	3,361
Hood Rubber Co.	*334
Littlejohn & Co., Inc.	1,114
The Meyer & Brown Corp. pkgs.	915
The Meyer & Brown Corp. pkgs.	*67
Rogers Brown & Crocker Bros., Inc.	556
Charles T. Wilson Co., Inc.	277
March 11. By "London Mariner," London.	
Baird Rubber & Trading Co., Inc.	299
The Meyer & Brown Corp. pkgs.	127
March 12. By "Baltic," Europe.	
The Meyer & Brown Corp. pkgs.	15
March 12. By "Caronia," London.	
Baird Rubber & Trading Co., Inc.	19
Charles T. Wilson Co., Inc.	100
March 13. By "American Shipper," London.	
Bierrie & Co., Inc.	225
General Rubber Co.	10,464
Littlejohn & Co., Inc.	210
The Meyer & Brown Corp. pkgs.	165
Charles T. Wilson Co., Inc.	1,314

*Arrived at Boston.

†Arrived at Los Angeles.

	Cases
MARCH 14. By "Fairfield City," Far East.	
Baird Rubber & Trading Co., Inc.	332
Bierrie & Co., Inc.	20
Hood Rubber Co.	298
Littlejohn & Co., Inc.	938
Rogers Brown & Crocker Bros., Inc.	165
Charles T. Wilson Co., Inc.	51
MARCH 14. By "Tijuca," Far East.	
Poel & Kelly, Inc.	798
MARCH 15. By "Regina," Far East.	
General Rubber Co.	20
MARCH 16. By "Pyrrhus," Far East.	
Hadlane & Co., Inc.	851
Hood Rubber Co.	*612
Raw Products Co.	325
Rogers Brown & Crocker Bros., Inc.	1,315

Africans

	Cases
FEBRUARY 25. By "Bankdale," Europe.	
Littlejohn & Co., Inc.	137
MARCH 5. By "Albert Ballin," Europe.	
Littlejohn & Co., Inc.	229
MARCH 8. By "Schodack," Europe.	
Littlejohn & Co., Inc.	206
MARCH 10. By "New Amsterdam," Europe.	
Littlejohn & Co., Inc.	219
MARCH 15. By "Roussillon," Europe.	
Littlejohn & Co., Inc.	207

Balata

FEBRUARY 28. By "Cottica," Far East.	
Middleton & Co., Ltd. ....bales	103
FEBRUARY 29. By "Alban," Far East.	
Paul Bertuch & Co., Inc.	132

Guayule

	Cases
FEBRUARY 27. By "Norden," Mexico.	
Baird Rubber & Trading Co., Inc.	560
Continental Rubber Co. of New York	2,470
MARCH 2. By "Tela," Mexico.	
Baird Rubber & Trading Co., Inc.	560
Continental Rubber Co. of New York	1,060
MARCH 7. By "Mexico," Mexico.	
Baird Rubber & Trading Co., Inc.	560
Continental Rubber Co. of New York	2,180
MARCH 15. By "Nordstjernan," Mexico.	
Baird Rubber & Trading Co., Inc.	1,210
Continental Rubber Co. of New York	1,620

Rubber Latex

FEBRUARY 27. By "Stadsdyk," Far East.	
General Rubber Co. ....Gallons	37,562

Paras and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Miscel. Cases
FEBRUARY 29. By "Alban," Brazil.					
H. A. Astlett & Co.	635	12	267	24	....
Paul Bertuch & Co., Inc.	1,347	33	17	....	....
General Rubber Co.	207	85	166	239	*1
Littlejohn & Co., Inc.	1,562	40	364	225	....
The Meyer & Brown Corp., pkgs.	538	....	....	....	....
MARCH 15. By "Hubert," Brazil.					
Paul Bertuch & Co., Inc.	†362	....	‡391	**561	††73
Littlejohn & Co., Inc.	502	....	458	....	....
The Meyer & Brown Corp., pkgs.	250	....	....	....	....

* Mixed. † Biscuit. ‡ Sacks. ** Bales. ††Washed and Dried.

United States Crude and Waste Rubber Imports for 1928 by Months

	Plantations	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1928	Total 1927	Balata	Miscellaneous	Waste
January ....tons	43,668	1,580	433	126	435	1	46,243	45,736	120	1,292	248
February	27,852	756	125	125	587	..	29,445	27,701	58	517	310
Total, two months, 1928..tons	71,520	2,336	558	251	1,022	1	75,688	.....	178	1,809	558
Total, two months, 1927..tons	67,972	4,046	482	367	570	..	....	73,437	225	2,443	1,400

Compiled from statistics supplied by the Rubber Association of America, Inc.

Exports of Rubber, Caucho and Balata from the Amazons During 1927

EXPORTERS	Europe: Fine Kilos	Medium Kilos	Coarse Kilos	Caucho Kilos	Balata Kilos	Total Kilos	America: Fine Kilos	Medium Kilos	Coarse Kilos	Caucho Kilos	Balata Kilos	Total Kilos	Grand Total Kilos
General Rubber Co of Brazil—Para-Manaos	2,432,305	281,956	228,472	415,699	10,462	3,368,894	2,074,892	239,707	759,244	852,846	39,361	3,966,050	7,334,944
Berringer & Co.—Para-Manaos	1,485,819	188,877	257,890	446,861	426,716	2,806,163	1,888,703	135,818	263,130	1,196,937	133,471	3,618,059	6,424,222
J. G. Araujo & Co., Ltd.—Manaos	424,381	81,285	53,906	74,707	120,901	755,180	1,682,842	67,575	233,815	703,462	116,264	2,803,958	3,559,138
Ranniger & Co.—Para	899,113	35,529	105,031	166,515	155,840	1,362,028	1,127,442	70,258	204,608	238,518	.....	1,640,826	3,002,854
Suarez, Filho & Co.—Para	809,408	.....	210	.....	.....	809,618	674,473	1,060	119,386	169,093	.....	964,012	1,773,630
S. Bitar, Irmãos—Para	497,908	6,738	155,801	54,766	.....	715,213	460,056	8,825	229,481	190,850	10,032	899,244	1,614,457
F. Chamié—Para	23,710	.....	.....	.....	.....	23,710	646,490	4,870	595,880	65,560	100,743	1,413,543	1,437,253
Cia. Paraense de Plantação e de Borracha	45,920	.....	.....	.....	.....	45,920	390,360	10,710	262,717	153,464	15,720	832,971	878,891
Aldelbert H. Alden, Ltd.—Para-Manaos	376,369	53,618	100,069	100,805	116,496	747,357	78,030	.....	.....	.....	5,526	83,556	830,913
Companhia Fluvial—Manaos	154,200	16,965	29,598	154,525	.....	355,288	243,871	9,561	29,152	55,736	.....	338,320	693,608
Suter, Baumann & Co.—Para-Manaos	251,756	27,909	38,280	50,019	62,930	430,894	32,362	1,185	8	30,480	10,110	74,145	505,039
Semper & Co.—Manaos	248,225	10,909	27,706	2,973	3,150	292,963	127,230	3,760	4,060	.....	12,316	147,366	440,329
Ferreira Costa & Co.—Para	42,860	.....	5,080	20,320	.....	68,260	129,561	12,274	33,206	103,918	.....	278,959	347,219
Jos. Origet & Co.—Para	95,840	6,774	5,405	163,572	.....	271,591	.....	.....	.....	.....	.....	.....	271,591
B. Levy & Co.—Manaos	71,875	16,280	15,732	12,425	22,650	138,962	13,760	.....	.....	10,560	25,530	49,850	188,812
Teixeira & Co.	10,240	.....	.....	2,100	.....	12,340	.....	.....	.....	152,450	.....	152,450	164,790
Amazon River St. Nav. Co. (1911) Ltd.—Para	63,712	1,221	5,307	5,904	.....	76,144	.....	.....	.....	.....	.....	.....	76,144
Hirsen, Jones & Co.—Manaos	8,223	50	157	3,720	.....	12,150	82	.....	1,925	.....	17,646	19,653	31,803
Ribeiro & Co.	.....	.....	.....	.....	.....	.....	26,727	.....	.....	.....	.....	26,727	26,727
J. S. Amorim	.....	.....	.....	.....	.....	.....	490	.....	960	.....	.....	1,450	1,450
Sundry—Para	8,500	.....	.....	.....	13,731	22,231	15,317	.....	7,070	70	16,234	38,691	60,922
Total from Para and Manaos	7,950,364	728,111	1,028,644	1,674,911	932,876	12,314,906	9,612,688	565,603	2,744,642	3,923,944	502,953	17,349,830	29,664,736
Total from Iquitos	49,988	24,750	10,154	19,805	601,740	706,437	77,442	151,256	46,914	36,034	351,525	663,171	1,369,608
Grand total from the Amazons	8,000,352	752,861	1,038,798	1,694,716	1,534,616	13,021,343	9,690,130	716,859	2,791,556	3,959,978	854,478	18,013,001	31,034,344

Destinations

	From Para Kilos	From Manaos Kilos	From Iquitos Kilos	Total Kilos
United States	6,776,830	10,180,415	663,171	17,620,416
Germany	1,662,938	3,604,499	268,549	5,535,986
England	1,001,704	3,561,776	229,940	4,793,420
France	1,354,852	557,333	207,948	2,120,133
Holland	392,414	158,320	.....	550,734
Brazil (South)	346,291	43,104	.....	389,395
Spain	18,860	.....	.....	18,860
Argentine	.....	3,190	.....	3,190
Italy	2,210	.....	.....	2,210
Totals	11,556,099	18,108,637	1,369,608	31,034,344

Compiled by Berringer & Co., Para, Brazil.